B.W.B.
Jan 4/27.

Vol. XXXVIII DECEMBER, 1926 No. 4

THE WILSON BULLETIN

A Magazine of Field Ornithology

Published by the
WILSON ORNITHOLOGICAL CLUB
at
SIOUX CITY, IOWA

Entered as Second-class Mail Matter, July 13, 1916, at the Postoffice at Sioux City, Iowa, under Act of March 3, 1879.

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Published quarterly, in March, June, September, and December, as the official organ of the Wilson Ornithological Club, at Sioux City, Iowa.

The current issue of the Wilson Bulletin is printed by the Verstegen Printing Company, Sioux City, Iowa.

The Wilson Bulletin is sent to all members not in arrears for dues. The subscription price is $1.50 a year, invariably in advance, in the United States. Outside of the United States the subscription rate is $2.00. European Agents, Dulau and Company, Ltd., 34-36 Margaret St., Oxford Circus, London, W. 1., England.

All articles and communications for publication, books and publications for notice, and exchanges, should be addressed to the Editor.

New subscriptions, changes of address, and applications for membership should be addressed to the Secretary. Personal items, news of events in the scientific world, and other notes suitable for our "Notes Here and There" department may also be addressed to the Secretary.

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THE WILSON ORNITHOLOGICAL CLUB

Founded December 3, 1888. Named after Alexander Wilson, the first American ornithologist.

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THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY

Vol. XXXVIII (Old Series) No. 4 December, 1926

Vol. XXXIII (New Series) Whole Number 137

A STUDY OF A NESTING OF MAGNOLIA WARBLERS (DENDROICA MAGNOLIA).

BY MARGARET MORSE NICE.

It had been my chief ornithological ambition during the summer of 1925 to discover the nest of a Magnolia Warbler. And when my wish came true, watching the little family grew to be my main occupation in life. It was a never-to-be-forgotten experience—the long hours by the nest in the juniper, recording the doings of the exquisite little birds and listening to the marvelous song of the Hermit Thrush.

Grey Rocks, in Pelham, a hill town in central Massachusetts, is a fascinating place for the nature lover. It is a hill top (700 feet above sea level) from which a wide view of the Connecticut Valley may be seen, bounded on the south by the Holyoke Range, on the north by Mount Toby and Sugar Loaf, with the Berkshire Hills lying to the west. The hilltop itself is rendered picturesque by junipers and cedars; there are also white and pitch pines, grey birches, maples and oaks. The surrounding woodland is largely made up of white pines and hemlocks to the west, and hardwoods to the south and east. In the woods there are rushing brooks, ferns, wild flowers and many kinds of animals: chipmunks, red, grey and flying squirrels, porcupines, foxes and deer. There is only one pest—mosquitoes, for we have no chiggers, wood ticks, black flies, nor English Sparrows.

The avifauna belongs to the Transition Zone with a marked Canadian element. Some of the most characteristic songsters are the Whip-poor-will, Phoebe, Field Sparrow, Chewink, Scarlet Tanager, Red-eyed Vireo, and in the western woods the Solitary Vireo. But the glory of Grey Rocks lies in its thrushes and warblers. Ovenbirds and Maryland Yellow-throats are abundant and insistent; the Black and White, Nashville, Myrtle, Magnolia, and Black-throated Green Warblers are constantly heard near my mothers' house on the hilltop; the Chestnut-sided abounds in the cut-over land to the east; the Black-throated Blue, and Blackburnian nest in the hemlock woods to the west and one or two pairs of Canada Warblers are to be found in the deep woods. Veeries sing from the swamps to the south, while on

the hilltop we are blessed with the wonderful music of the Wood Thrush and Hermit Thrush.

Magnolia Warblers are uncommon in this region; it is only within a mile of Grey Rocks that we have ever seen them during the breeding season. There was but one pair nesting near the house in 1925; this fact was a decided advantage for I always knew that the singing and other activities were those of this particular pair of birds. Moreover, the male had a peculiar song so that I was able to distinguish him even when a visiting Magnolia Warbler appeared upon the scene.

THE SONGS. Instead of the great variety of songs mentioned by some writers[1,2and3], this particular example of *Dendroica magnolia* had only two songs, each of which was varied at times by the addition of one or two syllables; one of these I called *weechy weech* and the other *sing sweet.*

Weechy Weech. This was a plain little song, yet with something of a sweet and lisping character. At close range short preliminary and final syllables were discernible—*Ye weechy weechip,* but at some distance only *weechy weech* could be heard. The accent was always on the last *weech* which was higher than the other notes. This was evidently a shortened form of the most characteristic song of the species; very occasionally this warbler would give the proper song—*Ye weechy weechy weechip.* Two other Magnolia Warblers heard in this region June 30, July 2, 4, and 19 sang the complete form.

Weechy weech was primarily a day song, seldom being heard very early (I only once recorded it about 4 A. M.[4] and twice about 5 A. M.) nor was it ever the last song in the evening; rarely occurring after 7 P. M. and only once as late as 7:30 P. M. During the period of incubation it was the perch song, the one proclaiming territory and appeared to be taken as the serious business of life. I never saw this warbler flitting about between *weechy weeches;* at this period he always sat at the top of a tree and devoted himself to his singing. Between each song he gazed about or sometimes preened himself; during the song he looked skyward. His little head seemed such a bright blue in the sunshine, his breast such a brilliant yellow and the black stripes so decorative that he made a lovely sight.

During the feeding of the young, the warbler must have interspersed *weechy weech* between his searches for insects. As I was watching activities at the nest at this time, I never happened to see him

[1]S. E. White, *Auk,* X (1893), 228.
[2]Lynds Jones, *Wilson Bulletin,* XII (1900), 36-38.
[3]F. M. Chapman, Warblers of North America, 1907, p. 125.
[4]All hours are given in Eastern Standard time.

while singing this song, but I did hear his *weechy weech* constantly from different points of the compass and often recorded during the space of one minute several songs and the appearance of the bird with an insect in his bill. Another Magnolia Warbler on July 4 (apparently an unmated bird) was singing while flitting about.

When singing steadily, the warbler uttered *weechy weech* from six to seven times a minute, nine songs being the most ever recorded during sixty seconds. In two sets of long series—fifty-seven different minutes on July 9 and seventy-eight on July 14, the average of each series was five songs a minute, varying from one to nine on the earlier date and one to seven on the later. In both cases he was gathering food for the nestlings.

The shortest interval between two songs was five seconds. During his time of leisure when there were eggs in the nest, he often sang at quite a regular rate: on June 29 at 10:30 A. M. the number of seconds between seventeen consecutive songs were 8, 7, 9, 9, 8, 9, 9, 7, 8, 8, 9, 9, 10, 8, 9, 7, 8. An hour later the intervals for two minutes were 7, 8, 9, 7, 8, 9, 10, 10, 8 8, 9, 8, 8, 10.

Weechy weech was sung throughout the day while the eggs were in the nest and also during the first three days after the young hatched. The next four days it was hardly heard at all but it was renewed in full vigor the next day—July 14. After the young left the nest it was sung less and less and was heard for the last time before 6 A. M. on July 23.

Sing Sweet. This song usually consisted of two notes but occasionally of three and very rarely of four. It was more musical than *weechy weech*, a somewhat bell like note; it seemed loud for so little a bird. Both syllables were equally accented, but the second was slightly lower than the first; in the *sing sing sweet* variation, the third was slightly lower than the first two. I cannot find any description in the literature that fits this song, nor have I heard other Magnolia Warblers singing it (my experience with this species has been limited.)

This was primarily a feeding song; in every case but one, when I could see the warbler he was flitting about as he sang. The one exception was at 8 A. M., July 17, when I observed him sitting on a branch and preening himself between songs. His favorite place while he sang *sing sweet* was a pitch and white pine grove about 100 yards northwest of the nest; his favorite time was from a half to three-quarters of an hour in the evening. The last *sing sweet* was heard at the following times on fourteen evenings: June 30, 7:37; July 4, 7:35; July 5, 7:46; July 7, 7:37; July 8, 7:40; July 10, 7:48; July 11, 7:45; July 12, 7:49; July 13, 7:37; July 14, 7:42; July 15, 7:30;

July 17, 7:25; July 24, 7:13. It may have been equally characteristic of the early morning but unfortunately I was often asleep at that time; on twelve mornings I recorded this singing very early—from 3:30 to 5:00. During incubation and feeding of the young *sing sweet* was not usual during the day, but it became so after the young had left the nest. It was the only song heard from July 24 to 29; at 6:27 A. M. the last one of the season was recorded.

Sing sweet occurred as many as eleven times a minute when the bird was singing steadily, but usually the rate was less. The average of fifty-two minutes recorded at different times was six songs. The intervals between songs was quite variable as the following records on June 30 will show: eight seconds, 13, 6, 10, 5, 5, 25, 13, 7, 7, 14, 9, 10, 5, 15, 10. Another sample of two minutes showed more regularity: 5, 7, 5, 13, 5, 5, 6, 6, 5, 5, 5, 5, 8, 10, 4.

The common form of this song was *sing sweet*, but *sing sing sweet* occurred irregularly; sometimes one or two were interspersed between *sing sweets*, but at other times for a number of minutes there would be a continuous series of the longer forms. Curiously enough when the warbler was thoroughly in the mood of *sing sing sweet*, he usually uttered soft *tit-tits* between each song. Thus one minute's record ran as follows: sss-sss-tt-tt-tt-sss-tt-tt-sss-tt-sss-tt-tt-tt-tt. In one minute there were six *sing sing sweets* and thirteen *tit-tits;* in another four of the former and ten of the latter; while during a third minute nothing but twelve *tit-tits* were heard. One had to be very close in order to detect the *tit-tits;* I ascertained that they did not occur when he was singing *weechy-weech* nor *sing sweet*. Sometimes there were only a few of these little chirps between the *sing sing sweets* and occasionally none at all. This *tit-tit* seemed much the same as the alarm note.

Weechy weech and *sing sweet* as a rule indicated different moods—the one typically proclaiming territory and the other a feeding song; usually one would be sung consistently for some time—in the case of *weechy weech* for hours—before changing to the other, and there was nearly always a period of silence between the two kinds of songs. Occasionally, however, especially in the early evening, the warbler might switch back and forth rather freely; thus from 6 to 7 P. M., July 8, he changed five times, the series varying from sixteen to seventy-nine songs of one kind, separated by intervals of silence lasting from two to five minutes except in one case when it was less than a minute. On only two other occasions did I hear a sudden change from one song to the other.

History of the Nest. Magnolia Warblers were first seen and heard singing on Grey Rocks May 19 and 20, 1925, but after that were

absent, so that I had begun to fear that we were not to be favored with a nesting pair on the slope south of the house as we had been in other years. But on June 17 I was rejoiced to hear *wecchy weech* in this region and to see the pair of birds. The late date would indicate that a nest had been started elsewhere and had come to grief.

It was *sing sweet* that led to my discovery of the nest. This was a new song to me when I first heard it the evening of June 18; on searching for the singer among the cedars about 200 feet south of the house I saw the female Magnolia Warbler with nesting material in her bill; she appeared twice, both times disappearing into a white pine and once struggling out of a juniper. Her mate continued to sing but did not come into view. The next morning I found a little incompleted nest in the juniper.

The nest was entirely hidden from sight. It was thirty-three inches from the ground in an upright clump of juniper; the only opening was on the north side, from this direction the incubating bird could barely be seen. When finished, the nest was a rather simple affair; it was composed of dried grass stems, lined with white pine needles and black horse hairs. Cedars, white pines and grey birches were the chief trees surrounding the site.

Activities During Incubation. For fear of frightening away the warblers I did not disturb them at all during the process of nest building and visited them but seldom while the eggs were in the nest. These were laid June 22, 23 and 24. Whenever we went to the nest the female stayed on her eggs until nearly touched when she slipped off, flew a few feet and quietly waited. The male never objected to our visits; indeed, I doubt whether he knew of them, for his singing would go on without interruption.

The chief occupation of the male bird during this period was singing, interrupted by occasional sallies to drive off a Myrtle Warbler. *Weechy weech* with sometimes a change to *sing sweet* could be heard nearly all day long from a variety of positions—sometimes as near to the nest as twenty yards but most of the time further away. He usually sat on the very top of different cedars, sometimes facing the nest but often not. I never could see that he had any favorite "singing tree."[5]

On June 23 at 4:30 P. M. I was astonished to hear a curious new note from this bird—a loud shrill *eep;* this was recorded on four other days: July 3, at 7 P. M. for several minutes between two series of *sing sweets;* July 4, at 3:30 P. M.; July 9, when there was no singing in the evening, only some *yeeps* about 7:20, and July 13 at 8:25 A. M. I

[5]H. Mousley, *Auk*, XXXVI (1919), 339-348.

do not know what state of mind this note indicated; with the exception of the last time the warbler was at his feeding grounds, not near the nest. Twice I recorded it from the female while the young were in the nest; on the second occasion it seemed to be a scolding note—a use for which it appeared eminently fitted.

There was only one special adventure that I witnessed during the period of incubation and that was the visit of a rival. On July 2 at 6 A. M. I heard *weechy weechy weechip* south of the house and hastened out to discover the explanation. There was a new male apparently bent on luring the lady Magnolia from her home. The wrathful husband chased the newcomer around and about, but the impudent stranger would pop up unabashed on top of a juniper bush, singing his song with as much assurance as if he expected an extra two syllables to captivate the lady. This contest continued for ten minutes or so, the warblers answering each other, each singing his own song consistently, until the interloper departed. At 7 o'clock there was only *weechy weech* to be heard and this appeared to have a triumphant ring about it; it was sung practically all morning long, as if the little warbler were guarding his home with redoubled zeal.

Two days later I heard *weechy weechy weechip* from a Magnolia Warbler about 300 yards north of the nest, but I never heard it later in this locality; this might well have been the unmated bird that had caused the excitement on July 2.

Activities while the Young were in the Nest. At 8:15 A. M. on July 6, the eggs were not hatched, but at 6 P. M. there were three tiny blind orange-red infants, naked except for a few minute tufts of black down.

The next morning at 9:52 I quietly ensconsed myself in a chair fifteen feet north of the nest in the shade of a cedar and partly concealed by it. The nest was beautifully protected by the juniper branches so that the sun never shone on it except for a short time each morning. At 9:56 the female appeared, seemed disturbed, flirted her tail, sat in the cedar south of the nest and uttered a gentle *tit*. At 10:03 she went to the young and brooded them without feeding. She left at 10:17, returned at 10:20, fed quickly, waited a moment and then flew away. When she returned, however, she was overcome with timidity and stood about with an insect in her bill, flirting her tail and saying *tit, tit, tit*. Suddenly the male appeared with uplifted tail and quivering wings—apparently in a courting attitude; she flew to a nearby cedar, he followed and both disappeared. In a minute or two

she came to the nest and started to brood; immediately the male appeared on the brim, she slipped off and he followed.

In the hour and a half of observation this first day the female fed the young five times and brooded twice; she was intermittently troubled by my presence. The male paid no attention to me; he did a deal of singing but his activities at the nest were confined to one visit, the result of which was to drive his mate away.

On July 8 the father was beginning to realize the situation for he fed the young seven times in comparison to his mate's thirteen during three hours' observation. Neither bird showed any timidity, even though in the afternoon, driven by lack of shade, I moved to a new position within eight feet of the nest and finally as near as five feet. After this I sat at a distance of eight feet from the nest in the mornings and six feet in the afternoons. Twice a red squirrel worried me by passing through the birches and cedars not far from the nest. From 6 to 7 P. M. the male sang during forty of the sixty minutes, uttering *weechy weech* 102 times, *sing sweet* 133 and *sing sing sweet* seven times.

Both parents usually flew to the cedar south of the nest and then approached from below, almost always using as a ladder a steeple bush that grew just north of the nest. Occasionally, however, they flew directly to the nest either from the cedar south of it or the pine to the west. The juniper branch containing the nest had one large opening to the north and a narrow one to the east; this north entrance was always used by the male for both entrance and exit; in leaving he usually flew off to the northwest but a few times went to the northeast. The female, on the other hand, although at this time always coming to the north entrance and feeding from there, usually left by the east opening; this was the direction she regularly faced while brooding.

The third day the female seemed to have a great deal of cleaning to do inside the nest; she put her head down and rooted around, she rose, she moved about, and finally settled down facing north or west instead of the usual direction east. She brooded after seven of the ten feedings during two and a half hours in the morning; as always she left the nest at the approach of her mate. He seemed to have thoroughly wakened up to his duties, for he fed the young nine times. He sang *weechy weech* 286 times—singing being recorded during fifty-seven of the 150 minutes. Both birds showed slight nervousness at first, uttering the gentle *tit* a number of times before they came to the nest to feed; the female also on one occasion said *ip, ip, ip, eep, eep*—the first time I had heard this note from her. To human ears it seems

well adapted to express disapproval, disgust, rage, while the *tit* was so soft as to be almost inaudible.

From 2:25 to 4:25 the male fed the young twice as often as his mate, although she showed no timidity towards me until the very end. Once they were together at the nest rim, the male fed first and flew away, the female then fed and settled down to brood. At 4:02 the evil squirrel came to a blueberry bush about five yards east of the nest and started to regale himself with the unripe berries; I rose in righteous wrath and frightened him away. The little mother must have been near for at 4:06 when she came with a caterpillar, she seemed timid all at once and could not screw up her courage to come to the north entrance which was so near to me; she shortly solved her problem by coming into the narrow east opening for the first time; she fed a baby, ate an anal sac and settled down to brood facing me.

On July 10 it rained all morning and I heard no singing; during the two afternoon sessions of nest watching the male did not sing at all; in fact the only songs I heard all day were ten *sing sweets* and three *sing sing sweets* from 7:46 to 7:48 in the evening. The parents were equally solicitous in feeding the nestlings.

The miserable squirrel was about again and I resolved to get rid of him if I possibly could, so when I returned at 3:42 I was armed with a shot gun. A curious change had come over my attitude during these days of watching the little brood; before this I had never felt any enmity towards red squirrels; I knew, of course, in an academic way, that they robbed birds' nests but I had never felt called upon to interfere. Reason without emotion leads to no action. But now since my affection for these particular little birds had grown so strong and along with it my apprehension that at each visit I would find a despoiled nest, I had come to hate that squirrel with a perfect hatred.

As I sat there waiting, six feet from the nest (I always had to be near in the afternoon to escape the sun), the female seemed a little troubled. My proximity, added to the fact that I was dressed in khaki instead of my usual green dress, seemed to tax her wits; she did not waste time objecting at me, but she squeezed in between the juniper branches from the south—this being a brand new way of entrance; she fed and then brooded, facing south. This was 4:05; at her next visit—4:23—she came to the north entrance, but at 4:29, 4:32, 4:37, and 4:42 she struggled in from the south, always leaving, however, by the large north opening. As she was peacefully brooding after the last feeding, a rustle in the blueberry bush announced the arrival of the enemy; a few moments later that menace was ended and a great load had been

lifted from my mind. But the poor little mother had darted off as fast as she could at the sound of the terrible report!

The next morning it was plain to be seen that I was eyed with great disfavor by the mother bird after yesterday's experience; she spent almost the whole hour that I watched in chipping at me. She fed only three times and brooded once for two minutes. She was clearly much agitated, she did not hunt for food—except for herself—but sat still most of the time and preened herself to an accompaniment of *tits* at the rate of about thirty a minute. One of her most used perches was in the cedar just behind me, which brought her much nearer to me than if she had been at the nest. I did not record each and every *tit*, but I calculated that in that short space of time I had been reproved with at least a thousand.

The male showed a return to his conduct of July 7 for he seemed bent, strangely enough, on courting his mate. Twice when he saw her he made a curious little squeaky, grating note *kree-ee kree-ee*, in the meantime spreading his wings and tail.

The main features of the sixth day from 9:30 to 11:30 and 3:22 to 4:52, were the entire absence of singing and of brooding, the greater devotion to the young of the male than the female—he feeding twenty times to her eleven—and the increased self-assertivenss of the young. The female did not spend time objecting at me (she seemed almost over her gun shock); she simply absented herself for considerable periods from the nest, the longest of these being forty-one minutes. In the morning she came to the north entrance each time and left the same way except twice when she slipped out the east opening; in the afternoon she squeezed through the south side once, used the east entrance once and the north twice. The male gave his courting note once.

This was the first day on which the young made themselves conspicuous. Whenever a parent left after feeding there was sure to be one little head at least that waved itself about disappointedly before subsiding. In the morning there was quite a breeze that kept intermittently rocking the juniper branch that held the nest and as continually raising false hopes in three hungry little birds. Eighteen times in the two hours I recorded a jerk by the breeze and the consequent excited heads. In the afternoon one baby was trying to preen its little breast with his eyes half opened, nearly falling over in the attempt. Later one stood up on its feet. At one time all three heads could be seen on the nest rim, whereas before this I could never see the babies except when they stretched up their heads to be fed. At this stage they could hardly be called beautiful from our standpoint as they gaped over the edge of the nest with their enormous red and yellow open bills.

black goggle eyes tight shut and tufts of black down standing pompadour!

On July 13 the female unfortunately seemed to have remembered about the dreadful noise for she spent much of her energy scolding; at times she did not seem much troubled and the rate of *tits* per minute dropped as low as twenty but again they rose to forty-five and fifty a minute. She flirted her wings and tail when chipping vigorously, but preened herself or gathered insects for her lunch when her agitation seemed half forgotten. In the hour and three-quarters that I watched in the morning the male fed eleven times to his mate's three. Once I heard him say *eep, eep*, twice give the courting note and eleven times sing *weechy weech*.

From 6 to 7 P. M. the male again on three occasions quivered his wings and said *kree, kree, kree*, his mate being near him each time. It was hard for her to get sufficient confidence to feed the young, but twice she hurried up after the male had gone to the nest and fed directly after him. She spent some time in the cedar a few feet above me; I seemed to have a sort of horrid fascination for her.

The eighth day was particularly interesting both during the three morning hours of observation and the hour and twenty minutes in the evening. In the first place the nestlings had changed over night from hideous frights to bonny fluffy baby birds. Moreover, the male was in full song again, uttering *weechy weech* 384 times in the morning (singing being recorded during 78 of the 180 minutes) and sixty-one songs in the evening. Another curious thing was the brooding of the young by the female from 8:03 to 8:20 although the temperature was no colder than it had been the day before—62 degrees.

As the little mother sat on the nest she looked the picture of lovely contentment and very pretty with her soft blue grays and bright yellow throat. After a while she moved as if somewhat buffeted by hungry heads but she settled calmly down again with the air of knowing better than her children did what was best for them. The first time that she came to feed she squeezed through the prickly branches to the south and the next time she forced a new entrance to the southwest, but after that she always came and left by the north opening. She spent some energy in chipping at me, but not very strenuously; two minutes that I counted averaged twenty-three *tits* while one had as few as eleven.

Despite the fact of the male's singing so constantly he fed the young eighteen times to his mate's nine. Indeed, he was so busy with both occupations that one minute's record actually stands thus: 9:26—*weechy weech*. Male in cedar with green caterpillar, flies directly to

nest, feeds one young, leaves as usual. *Weechy weech.* Both these songs were uttered as always while he was out of sight. Three times there were evidences of amorousness and once the female responded by quivering her wings, but then flew directly away.

The nestlings were all the time growing more active; they stretched, rearranged themselves, preened their wings and sometimes stood up on their feet. Once they nearly stepped out of the nest in their eagerness to welcome their father. For the first time I heard them give a faint note *zee, zee, zee.*

From 6:20 to 7:40 that evening the young were fed at a more rapid rate than during any other period of observation—once every 3.3 minutes. The female showed no fear at all, always going to and leaving the north opening and hardly saying any *tits* at all. The male sang *sing sweet* three times, *weechy weech* five times, then fifty-three *sing sweets* with a few *sing sing sweets* in between. On the three occasions when the parents were together the male gave his *kree kree* note and his mate always hastened away.

Although the evening before the female had accepted me as harmless, on July 15 her former agitation returned; she protested for half of my morning visit at the rate of twelve to thirty *tits* a minute. However she always entered and left by the north entrance. The male sang only seven *weechy weeches* from 8:30 to 10:00. Part of the time he was searching for insects in sweet fern bushes within a few feet of me, uttering a few *tits* as he did so. He continued his courting of his mate, saying *kree, kree* on four occasions and interestingly enough he was once answered by the female with the same note; immediately afterwards they each fed the young, the male then flying out of sight while the female took up one of her favorite positions, the cedar behind my chair, and started to *tit.*

The young were prettier than ever and more vocal, at one time greeting their father with squeals of welcome.

An hour in the afternoon from 2:10 to 3:10, gave different results from any obtained before; there was no singing, no brooding, no courting and only two meals given and these by the male. The female came once with a caterpillar but must have eaten it herself; she spent thirty-eight of the sixty minutes in scolding. The curious thing was the wide variety of notes employed by her on this occasion, who before, with one small exception of five *eeps*, had confined herself to the most wearisome iteration of *tit.* This time she began with *tits* but all at once introduced a loud *yap* and again an *eep.* One series went like this: *eep, yeep, peep, tit, tit, yap, yeep*—the new notes being deeper and harsher than the old *tit.* Meanwhile the young kept very quiet. The male had come

with food but perhaps was impressed by the female's attitude, for he also ate his caterpillar and began to *tit* at me. She continued *pip, yip, yip, yap, eep.* Later the male fed the young while the female indulged in her everlasting *tit* twenty-five to a minute. The last notes I heard were *yeep, teep, yeep, tit, tit.*

I was unable to visit the nest again until 8:30 the next morning when to my bitter disappointment I found it empty. It may have been that the female's return of her fear of me and her curious new alarm notes had some relationship to the imminency of the young's leaving.

Although I searched and searched I never found the brood nor their mother. The little father I often saw and his singing was heard until July 29. *Sing sweet* was sung appreciably more than *weechy weech*, but both songs were recorded each day until the 23d; after that he only sang *sing sweet.*

General Summary

Data on the nesting behavior of Magnolia Warblers have been given by two writers — Miss Cordelia Stanwood[6] and Mr. Henry Mousley[7].

The former article is concerned mostly with the structure of nests and nestling plumages; there are several items of interest besides: that in once case the male brought material for the nest, that three of the nests were built in six days, that two different females exhibited the broken wing ruse (one with eggs and the other with young that had left the nest), and finally that one brood left at the age of eight days and two broods at nine or ten days. Mr. Mousley watched two broods of this species, one for two days and the other for some hours each day but one from hatching to the departure of the young. The male of the second brood fed the female on the nest and also ate the faeces—two things my warbler never did. The young left the eighth day instead of the ninth or the tenth as was the case with mine. His warblers resembled mine in several points: his male did not start to feed the young until the second day; no faeces were eaten after the first three days; both of his males showed great variations in the amount of singing, the second bird singing during the first five and on the eighth day but not on the seventh.

A brief summary of some of the aspects of the home life of the birds watched by me will be given.

Brooding. For the first four days the female brooded after thirty of her forty-two feedings; after that she was observed to brood

[6]"A Series of Nests of the Magnolia Warbler." *Auk*, XXVII (1910), 384-389.
[7]"A Study of the Home Life of the Northern Parula and Other Warblers at Hatley, Stanstead County, Quebec, 1921-1922." *Auk*, XLI (1924), 263-288.

only twice—on the fifth and eighth days. The male never brooded. There was no sheltering of the young from the sun because it was never necessary. The average number of minutes of each period of brooding was 10.7, almost exactly the same as with Mr. Mousley's Magnolia Warblers—10.5. The percentage of time that the young were brooded in comparison to the time of observation was as follows for the nine days: 19; 56; 33; 45; 3 1-3; 0; 0; 10; 0. (The first day was hot—81 degrees, while the temperature on the others varied between 62 degrees and 76 degrees, except on the afternoon of July 9.)

Feeding. The parents never gave any note as they approached or left the nest. The food was always visible in the parents' beaks, it was thrust far down into the throat of the nestling, and if not swallowed at once, was removed and given to another. Almost all the food given consisted of green larvae; there were seven round white objects that might have been spiders, and three grasshoppers during the last two days besides a number of miscellaneous insects. Almost without exception, the birds brought only one thing at a time; twice two small caterpillars were noted and once three.

The rate of feeding fluctuated from once every thirty minutes, to once every 3.3 minutes, the average being once every 7.6 minutes; with Mr. Mousley's birds the rate was once every 8.2 and 9.8 minutes. Since there were three young in my nest, and at one-tenth of the visits two young were served, each bird was fed on an average once every twenty minutes during the 26½ hours I watched.

Reaction to Other Birds. In general the relations of these warblers with other birds was not unfriendly; no attention was paid to passing Chickadees nor to Chewinks and Maryland Yellow-throats that nested near. The only birds towards whom the male showed animosity were a male Myrtle Warbler that he drove away both during incubation and while the young were in the nest, and the male of his own species who came to call July 2. On July 8 the female warbler gave short shrift to an inquisitive female Black-throated Green Warbler that seemed to wish to inspect the household.

They did not seem to notice the squirrel who several times came within fifteen feet of the nest. The bark of a dog up at the house brought a reaction: on July 9 the mother looked up quickly and panted while on the nest, and July 14 the young stopped their preening on the instant.

As to their human admirer, the male hardly ever seemed to mind me except on two occasions for a short while when my appearance was changed by a different costume. The female objected more than he from the very first; her timidity was increased when I moved very near

NESTING ACTIVITIES OF A PAIR OF MAGNOLIA WARBLERS

Date	Time	Hours	Number of times fed by female	Number of times fed by male	Average rate of feeding in minutes once in	No. times brooded	Time brooded in minutes	Times faeces eaten by female	Times faeces eaten by male	Times faeces removed by female	Times faeces removed by male	Number of songs Ww	Number of songs Ss	Temp.
July 7	9:50-11:22 A.M.	1½	5	0	18	2	17	?	0	0	0	?*	13	81°
July 8	10:45-11:15 A.M.	½	0	1	30	1	28	?	0	0	0	?†	0	72°
July 8	12:30- 3:00 P.M.	2½	11	4	10	6	64	4	0	1	0	141	20	71°
July 8	6:00- 7:00 P.M.	1	2	2	15	3	44	1	0	0	0	102	150	
July 9	8:35-11:05 A.M.	2½	10	9	7.9	7	65	2	0	2	1	286	0	62°
July 9	2:25- 4:25 P.M.	2	5	10	8	4	47	1	0	0	3	3	0	80°
July 10	12:40- 2:10 P.M.	1½	4	6	9	4	47	0	0	0	1	0	0	68°
July 10	3:42- 4:42 P.M.	1	5	4	6.6	4	21	0	0	3	0	0	0	
July 11	10:13-11:13 A.M.	1	3	5	7.5	1	2	0	0	2	0	0	0	73°
July 12	9:30-11:30 A.M.	2	7	11	6.6	0	0	0	0	1	1	0	0	76°
July 12	2:22- 3:52 P.M.	1½	4	9	7	0	0	0	0	1	2	0	0	
July 13	7:36- 9:20 A.M.	1¾	3	11	7.5	0	0	0	0	0	3	11	0	63°
July 13	6:02- 7:02 P.M.	1	4	6	6	0	0	0	0	0	2	0	0	
July 14	7:50-10:50 A.M.	3	9	18	6.6	1	17	0	0	3	3	384	0	62°
July 14	6:20- 7:40 P.M.	1⅓	13	11	3.3	0	0	0	0	2	2	5	56	
July 15	8:30-10:00 A.M.	1½	6	9	6	0	0	0	0	2	2	7	0	62°
July 15	2:10- 3:10 P.M.	1	0	2	30	0	0	0	0	0	1	0	0	
Total		26½	91	118	7.8	33	352	8	0	17	21	939‡	239	

*Singing *weechy weech* about one-half the time.
†Singing *weechy weech* about one-third the time.
‡Not complete.

the nest, when I rose to frighten away the squirrel, and most of all after I had shot the gun.

Behavior of the Female Warbler. The mother warbler had a most interesting character; her conduct was often hard to explain. She fluctuated between boldness and timidity without any apparent cause. After the squirrel incident, the sight of me often inhibited her impulse to feed, yet after a while her agitation would practically vanish, she would preen herself and collect insects for her own dinner, letting the infants go hungry. She showed considerable ingenuity in her discovery of new methods of entering the nest.

As to her notes, I once heard her give the courting note *kree*, and on two different dates, July 9 and 15, she gave utterance to the loud unmusical *eep* and variations of the same nature. Her favorite expression, however, was the gentle alarm note *tit;* I must have listened to its utterance several thousands of times.

Behavior of the Male Warbler. The male seemed to have a more straight forward nature than his mate; the only inexplicable thing about his conduct was his determination to court the female at the very end of this belated nesting cycle. The attention that he paid to his nestlings increased from zero on the first day to moderate interest on the second, equal zeal with his mate on the third day and after that to greater devotion than hers. From the fifth day on he outdid the female in all but one of the nine periods of watching; moreover he fed two nestlings nineteen times in contrast to her three times. He was in full song the first three days, was nearly silent the next four, in full song on the eighth, but hardly sang at all the ninth and tenth.

His songs were two: the day song and perch song *weechy weech* and the feeding and vesper song *sing sweet* with its variation *sing sing sweet*. He used three different notes: *tit* the alarm note, *kree* the love note, and *eep*, the significance of which I never fathomed.

Acquaintance with the personalities of these enchanting little birds was one of the chief rewards of this study—the appreciation of the vagaries of one, the indefatigability in song and devotion to home of the other, and the courage, beauty and charm of both.

Norman, Oklahoma.

NESTING OF THE COMMON TERN AT THOUSAND ISLANDS, JEFFERSON COUNTY, NEW YORK

BY CLARENCE BRETSCH

For at least twelve years Common Terns (*Sterna hirundo*) have nested at the Thousand Islands, St. Lawrence River, Jefferson County, New York. Eaton's late edition "Birds of New York" states that these birds are not known to breed within the limits of New York State except on the east coast. Mabel Metcalf Merwin, of Clinton, N. Y., observed them nesting near Clayton June 26, 1916, (see the *Auk*, Vol. 35, page 74, 1918) and I had observed them for years prior thereto in small numbers. They have been increasing quite rapidly in the past few years. The natives call them gulls.

The terns follow the fishing guides' boats, having learned that is the quickest and easiest way to procure food, picking up dead minnows that are thrown away, and when fish are not biting many fishermen amuse themselves by throwing minnows in the air and watching the terns catch them before they hit the water. They are very tame, many times coming within ten feet of the boat. When one of the terns catches a minnow, he immediately sets up a screeching that attracts the others, and they at once commence to chase it and try to take the same away.

In the narrows at the head of Thousand Island Park, Hanlon Nulty and Hugh Dickinson, during the summers of 1924 and 1925, maintained a dock where they sold live bait to fishermen. By throwing out the dead minnows several times a day to the terns, they succeeded in taming them to such an extent that many times while I was there, with not a tern in sight, they would go on to the dock, call and make a motion with their arms and hands, and the terns would immediately come if within hearing or seeing distance.

Since becoming a bird bander, I have given the terns as well as all other birds, closer study and attention. One can find these terns breeding from above Clayton, N. Y., to Fishers' Landing, N. Y., a distance of over seven miles, usually from June 10 to July 10. There are two islands, called First and Second Shoals, directly opposite Fishers' Landing, and about five hundred feet from the main landing, with no trees or vegetation on them—just bare rocks three or four feet above the water, and here the terns lay their eggs on the rocks in small depressions, without building any nests and in many instances without any lining whatever. On other islands I have found them near small tussocks of grass, and find they usually have from two to three eggs. I observed one nest with four eggs. Hundreds of motor boats pass

them daily, and in many instances only ten or fifteen feet away. I have never observed any of the terns brooding, although I have kept a careful watch for this during the day time. Querry: Do they brood at all? If so, are these birds here an exception, or do they depend upon the rays of the sun to hatch the eggs?

There is a low island above Clayton, N. Y., near the head of Grindstone Island that for fifty years or more has been called by the natives "Gull Island," and several smaller islands around there called "Little Gull Islands," and here the terns breed by the hundreds, but this year, 1926, scarcely a bird was hatched. I only found one young tern all summer, and this one on August 2, an extremely late date for this locality. I placed band No. 397970 on it. This year I arrived at my summer home at Thousand Islands on July 8, and the next day, in company with my captain, E. H. Halladay, visited all the breeding islands, intending to band a large number of young terns, but much to my surprise found none. I found a large number of eggs on all of the islands. I counted 137 eggs on a small part of Gull Island. We continued to visit this island twice a week, but never could we find any results, the eggs remaining the same, excepting the one young tern found on August 2. On August 18 Herring Gulls (*Larus argentatus*) suddenly appeared in large numbers, and the terns at once departed. On August 22 I broke open over twenty-five eggs, and all were spoiled. There must have been three hundred eggs still left unhatched on the different islands. Natives reported a very cold June, and I am of the belief that the eggs must have become chilled; but whatever the cause, one thing is sure — scarcely a young tern was hatched in that locality during the year 1926.

GARY, INDIANA.

A FIELD TRIP IN THE SIERRA

BY MRS. H. J. TAYLOR

In the Eldorado Forest Reserve near Echo Lake, California, the city of Berkeley maintains each summer, for nine or ten weeks, a Municipal Camp. It lies on an open flat of 7600 feet elevation, overlooking Lake Tahoe four miles distant. Echo Lake is half a mile or more west of the Camp. A flume carries water power from the lake to remote parts, running as a surface stream to the Camp then underground for a distance, again gushing forth soon to join the American River.

The banks of the flume are gorgeous with columbine, Indian paint brush, pink and yellow mimulus. The tall delphinium and quaint monk's hood peer from the shrubbery, the white blossoms of cow parsley and false hellebore, standing three or four feet tall, make the bank of flowers and shrubs a solid, unbroken mass—a secure place for the feeding and nesting of birds.

Beyond the thicket lie the little meadows, moist with bubbling springs. Rare ferneries are hidden in damp, sheltering coves. The tamarack pine, the stately red fir, the graceful hemlock lift their heads high in the air all through this region. It was here that on July 16, 1926, I took my field trip, going from the Camp along the flume for about half a mile, then returning to the Camp through the little meadows which lie ten or fifteen rods above the flume. The day was fair and grew warmer as the sun rose higher. From 5:00 A. M. to 7:30 A. M. I recorded the following species, the number of individuals being shown in parentheses:

Cabanis's Woodpecker. *Dryobates villosus hyloscopus.* (1).
Willow Woodpecker. *Dryobates pubescens turati.* (1).
White-headed Woodpecker. *Xenopicus a. albolarvatus.* (2).
Arctic Three-toed Woodpecker. *Picoides arcticus.* (2).
Red-breasted Sapsucker. *Sphyrapicus r. ruber.* (2).
Red-shafted Flicker. *Collaptes cafer collaris.* (1).
Calliope Hummingbird. *Stellula calliope.* (1).
Olive-sided Flycatcher. *Nuttallornis borealis.* (2).
Western Wood Pewee. *Myiochanes r. richardsoni.* (10).
Blue-fronted Jay. *Cyanocitta stelleri frontalis.* (6).
Western Evening Grosbeak. *Hesperiphona vespertina montana.* (3).
Cassin's Purple Finch. *Carpodacus cassini.* (3).
Pine Siskin. *Spinus pinus.* (3).
Thurber's Junco. *Junco hyemalis thurberi.* (25).
Green-tailed Towhee. *Oberholseria chlorura.* (1).
Western Warbling Vireo. *Vireosylva gilva swainsoni.* (15).
Calaveras Warbler. *Vermivora ruficapilla gutturalis.* (2).
Lutescent Warbler. *Vermivora celata lutescens.* (3).
Audubon's Warbler. *Dendroica auduboni.* (3).
Black-throated Gray Warbler. *Dendroica nigrescens.* (1).
Hermit Warbler. *Dendroica occidentalis.* (3).
Macgillivray's Warbler. *Oporornis tolmiei.* (2).
Golden Pileolated Warbler. *Wilsonia pusilla chryseola.* (20).
Sierra Creeper. *Certhia familiaris zelotes.* (1).
Slender-billed Nuthatch. *Sitta carolinensis aculeata.* (2).
Red-breasted Nuthatch. *Sitta canadensis.* (4).
Mountain Chickadee. *Penthestes gambeli gambeli.* (3).
Western Robin. *Planesticus migratorius propinquus.* (10).

The Thurber's or Sierra Junco is the most abundant species of this region. A year ago I located seventeen nests. One was in an old stump about five feet above the ground; all the others were in small depressions on the ground, hidden by the basal leaf of the mountain daisy, Queen Anne's lace, or false hellebore.

The Blue-fronted Jay is the most conspicuous bird. His voice compels attention. The beautiful iridescence of his blue coat as he sails, kite-like, through the air goes far to offset his raucous voice and bold manners. The young are a noisy lot.

The Western Tanager is the most brilliant in plumage. His short, cheery song of "pretty, pretty" is very true of his yellow-orange attire, set off by a red crown patch and black wings. He is unafraid, hopping about for food only a few feet away from one. As I sat in front of my tent a tanager alighted on my arm, looked about for a moment, then hopped to the ground for food.

The Robin is not abundant, but is seen daily about the Camp. The Western Evening Grosbeak is not uncommon. Twenty feet above ground, in a tree just back of one of the tents, a brood of lively young was reared.

The Olive-sided Flycatcher cannot be seen every day, but he can always be heard in the early morning and at twilight calling "where be-e-you?" The Red-breasted Nuthatch begins his "yank yank" about 3:30 A. M.

Two little fir trees stood ten or fifteen feet from the door of my tent. To these I fastened some suet. In less than two hours the Red-breasted Nuthatch was feeding. At 4:45 A. M. on the following day he was again at the suet. When the raucous jay found the suet, he guarded this forage beat. In his absence the Red-breasted Nuthatch, Western Tanager, and Willow Woodpecker helped them elves. The Calliope Hummingbird was a frequent guest, sipping nectar from the penstemon and columbine blossoms I had gathered. A Sierra Grouse and her four chicks came at early dawn almost daily, feeding at the edge of the Camp. A Mountain Quail with a flock of ten or twelve little ones was not far from the Camp.

The forage beat of many of these birds seemed to be very definitely defined. About half a mile from the Camp I found four or five Green-tailed Towhees feeding in the chaparral. These I saw daily for a week, in the same location.

Warblers were abundant, especially the Golden Pileolated. Often I saw twenty on a trip, and in about the same locality. I found two or three Lutescent Warblers in the same shrubbery on three successive mornings. A pair of Arctic Three-toed Woodpeckers spent several hours in a small group of trees. I found them in the same group on the following day. Three weeks in the Camp gave me a list of forty-two species.

BERKELEY, CALIFORNIA.

THE BIRDS OF THE CHOCTAWHATCHEE BAY REGION OF FLORIDA

BY W. W. WORTHINGTON AND W. E. CLYDE TODD

Introduction

Peninsular Florida has so long been a favorite field for ornithological activity that its avifauna is by now fairly well known. But the northwestern part of the State, stretching along the shore of the Gulf of Mexico, has for some reason received little or no attention, although in more recent years a little work has been done in the coast region of the adjoining State of Alabama. Believing that this section of Florida would repay investigation from an ornithological standpoint, the senior author in the fall of 1902 made a proposition to the authorities of the Carnegie Museum involving a six months' collecting trip to the region of Choctawhatchee Bay. This proposition having been duly accepted, he went to Pensacola, Florida, by rail, and thence by schooner to the Bay. Portland had provisionally been selected as headquarters, but upon his arrival there it seemed best to locate in Whitfield, a village about a mile to the south of the other, at the head of Alaqua Bayou. He arrived here the second week in November, 1902, and began operations on November 15, continuing without interruption until May 14, 1903. He was joined here on March 21, 1903, by the junior author, who remained until May 6, his stay thus covering the height of the spring migration. During this period of six months thirteen hundred and sixty-four specimens of birds were collected and preserved, many of them in excellent series. The present paper is based on a study of this collection, and on the field notes of both authors made at the time. The delay in its preparation and appearance is to be regretted, and may be explained, if not excused, as being due to pressure of other and more important work, but now that we are looking forward to the early publication of an authoritative distributional list of the birds of Florida by Mr. Arthur H. Howell, it seems desirable to put the facts on record without further delay. Scattered references to some of our observations have already appeared in various places, nor have such always been entirely accurate.

Description of the Region

The coastal plain of western Florida, fronting on the Gulf of Mexico, is low and flat; any elevation of twenty feet is a "hill" high enough to excite remark. The slope is imperceptible, and the water of the streams sluggish. The soil is sandy, and mostly unfit for cultivation. The prevailing tree is the long-leaf pine (*Pinus palustris*), which

covers the whole country, except in the immediate vicinity of water, forming an open forest of a monotonous character. To one who has been accustomed to a varied landscape and flora the sameness of such a forest, stretching away interminably in every direction, and appearing to close up like a wall at a little distance, is somewhat confusing, and a good sense of direction is needed to find one's way through it. The bird life of this pine forest is limited to a few species which are suited to such a habitat: the Sparrow Hawk, Mourning Dove, Red-cockaded Woodpecker, Bachman's Sparrow, Summer Tanager, Yellow-throated Warbler, Pine Warbler, Brown-headed Nuthatch, and Bluebird are the most characteristic. The ground beneath is mostly covered with bunchy grasses, with here and there areas of scrub palmetto and sometimes low bushes—good covert for such species as the Towhee, House Wren, Brown Thrasher, etc., but in general birds are not abundant here, at least in the nesting season.

The course of every stream, no matter how small, is marked by a fringe of hardwood trees and shrubbery, visible for a long distance through the pines, which in some places have been much thinned out by lumbering. Among the trees composing this alluvial forest are the magnolia, live oak, tupelo, maple, second-growth cypress, etc. A rich forest of this kind grows along the Alaqua River, which we explored from its mouth at Whitfield to Portland, about a mile above, and along a couple of short creeks emptying into the bayou in the immediate vicinity. The water in these creeks is so deep, even near their heads, that we had no difficulty in ascending them in the small boat from which much of our shooting was done. These shady woods, interspersed by stagnant pools, and with an undergrowth of bushes and vines and high ferns, are favorite resorts for such birds as the Prothonotary, Swainson's, Parula, and Hooded Warblers, Cardinal, Acadian Flycatcher, Pileated Woodpecker, etc., with a variety of other kinds during the season of migration. Where this woodland gives way to the pines there are frequent areas of dense thicket, which afford congenial haunts to the Catbird, Blue-gray Gnatcatcher, Carolina Chickadee, etc. Cultivated areas had their quota of the Mockingbird, Bob-white, Meadowlark, Orchard Oriole, and others.

To the east of the mouth of the Alaqua River there is a marsh several acres in extent, across the middle of which, at the time of our visit, ran an elevated board-walk, unused and fallen into decay, but still passable. This marsh was not negotiable in any other way, except by paddling around its edge, and for this reason could not be thoroughly explored. American and Least Bitterns, Sora Rail, Long-billed Marsh Wrens, and Florida Yellow-throats were common here.

but were all difficult to obtain. We explored also a cane-brake on the western side of the bayou, but found it destitute of bird life.

On May 4 and 5 we visited Horseshoe Bayou, on the south side of Choctawhatchee Bay, in a schooner chartered for the purpose, and thence crossed over to the Gulf Coast proper. Horseshoe Bayou is situated in Longitude 86° 20′ West, not far from the little town of Santa Rosa, in a desolate region surrounded by sand-dunes, covered with bushes and scrub. Continuing southward, we came to a tract of sand-hills rising fifty or sixty feet above the general level, and mounting one of these the Gulf of Mexico presently came into view, although a considerable stretch of sand-dunes still intervened. Crossing these, we found ourselves on a gently sloping beach averaging less than a hundred feet in width, faced by a bluff of varying height, and all of the purest white sand, dazzling white in the sunshine, contrasting finely with the waters of the Gulf, which were of the clearest green, the whole forming a beautiful picture. Here we found a few shore-birds, including the Cuban Snowy Plover, and in a marshy place at Horseshoe Bayou encountered a flock of Boat-tailed Grackles, the only ones seen during the trip. It is a matter of regret that our time here was so limited.

Remarks on Migration

One hundred and sixty kinds of birds were recorded during the period covered by our stay. Of this total fifty-three species, or one-third of the list, come under the class of summer residents and transient visitants. On going over these one is struck not only by the brevity of the list itself, but even more by the many species which were recorded as rare and seen on only a few occasions. If we were disappointed in the results of the work during the winter months, having failed to find so many kinds that we had reason to expect, we were doubly disappointed with the spring migration. There were a few kinds that arrived and became common in due course, but the anxiously awaited "bird wave" never materialized. The riparian woodland looked like an ideal place for birds, but the birds were not there, aside from a few common kinds. The Swainson's Warbler was in fact the only "desirable" species which actually came up to expectations. What we failed to find was of more significance than what we did find. The late Prof. Wells W. Cooke used our experience as a text whereupon to hang an important discovery in bird migration. We quote the following from his paper on the subject (Bull. U. S. Depart. Agric., No. 185, 1915, p. 33):

"During the spring migration of 1903 two experienced ornithologists spent the entire season on the coast of northwestern Florida, visiting every sort of bird haunt. They were eminently successful in the long list of species identified, but their enumeration is still more remarkable for what it does not contain. About 25 species of the smaller land birds of the Eastern States were not seen, including a dozen common species. Among these latter were the chat, the redstart, and the indigo bunting, three species abundant throughout the whole region to the northward. The explanation of their absence from the list seems to be that these birds, on crossing the Gulf of Mexico, flew far inland before alighting and thus passed over the observers."

Cooke's explanation is undoubtedly correct, as will readily be seen from a comparison of our list of species observed at Whitfield with that given by Mr. Arthur H. Howell in his "Birds of Alabama." It would be most interesting to learn if the same condition held also for the fall migration, that is, if there are species which do not reach the Gulf Coast at that season, but begin their flight some miles back of it. The general unsuitableness of the pine barrens for the great majority of the species is probably one of the causes for this avoidance of the region. In the case of such Mississippi Valley species as migrate through peninsular Florida, it is quite likely that their route carries them north-westward directly upon leaving it, and so they do not enter the Choctawhatchee Bay region at all.

List of the Species

[The following list contains 160 named forms.—Ed.]

The sequence and, in general, the nomenclature of the A. O. U. "Check-List" have been followed in the present paper, but an effort has been made to bring the names used down to date, in certain cases where the changes proposed seem to us to be justified. A few additional changes of this nature have been suggested. For all critical matter in the present paper the junior author is responsible, and he has also contributed such of the biographical notes as deal with the species that came under his observation.

Horned Grebe. *Colymbus auritus.* A common winter resident on Choctawhatchee Bay, where good-sized flocks were seen on November 8. Many birds of this species died during the winter, apparently of starvation. Several were caught alive, being much emaciated, and too weak to fly or dive. Dead individuals were also seen, but owing to crabs, gars, and other scavengers few of those which perished were likely to be noticed. The species was last seen alive on February 11. Six specimens were secured (December 3-10).

Pied-billed Grebe. *Podilymbus podiceps.* Like the last a common winter resident, frequenting the shores of the Bay, where it was

found singly or in small parties. April 11 was the latest spring date for it.

Loon. *Gavia immer.* A not uncommon winter resident. Numbers were seen on the bay on November 8, and it was noted almost daily up to April 10, while a single belated bird was seen as late as May 4.

Ring-billed Gull. *Larus delawarensis.* Rather common on the lower bay on November 8, but none visited the upper bay thereafter, nor the bayous.

Laughing Gull. *Larus atricilla.* Two seen on the lower bay on May 4, on our trip to the Horseshoe Bayou, were the only ones observed

Anhinga. *Anhinga anhinga.* A single bird was seen on April 9, sailing high in the air over the waters of the bay.

Double-crested Cormorant. *Phalacrocorax auritus auritus.* Apparently rare. Two were noted on November 8, and it was seen on an average about twice a month up to March 7, after which no more were observed until May 4, at Horseshoe Bayou.

Red-breasted Merganser. *Mergus serrator.* A winter resident, somewhat rare. A flock of eight was noted on December 11, a single bird December 23, and a flock of six January 19. Owing to constant persecution from local pot-hunters, what few ducks were seen were extremely shy.

Hooded Merganser. *Lophodytes cucullatus.* Rare in winter. A flock of four seen January 15 (one of which was secured), and a single individual on January 17, were the only recorded occurrences.

Mallard. *Anas platyrhynchos.* A winter resident. A flock of sixteen was noted on December 1, and a few stragglers were seen up to February 6, but none thereafter.

Florida Duck. *Anas fulvigula fulvigula.* Small flocks of ducks, believed to be of this species, were seen occasionally, from November 10 up to February 19, but unfortunately none were secured.

Blue-winged Teal. *Querquedula discors.* A small flock was seen on December 3, and two individuals on April 16. A winter resident.

Pintail. *Dafila acuta tzitzihoa.* A small flock haunted the bay shore from February 24 up to March 10. The last seen were two on March 27.

WOOD DUCK. *Aix sponsa.* One male bird was flushed near the head of one of the creeks, where it was feeding among the aquatic plants, on April 14.

LESSER SCAUP DUCK. *Marila affinis.* Occurs as a rather rare winter resident. Dates of record are November 18 (a flock of eight), 26, December 3, 10, and May 4 (a party of three at the Horseshoe Bayou). The last is a late date for so far south.

WHITE IBIS. *Guara alba.* Small flocks were seen in flight over the Alaqua River and Bayou on March 17, April 21, 27, and 29. We could find no evidence that the species was breeding in this vicinity, although the dates would suggest that it probably was.

AMERICAN BITTERN. *Botaurus lentiginosus.* The Bittern doubtless occurs as a winter resident, but it was noted only once in the fall, November 24, and but twice in the spring, March 28 and April 22 (a rather late date), on each occasion in the swamp at the mouth of the Alaqua River.

LEAST BITTERN. *Ixobrychus exilis.* This species probably breeds in the marsh at the mouth of the Alaqua River, where one was secured April 7. Another individual was seen at Horseshoe Bayou on May 5.

WARD'S HERON. *Ardea herodias wardi.* A not uncommon resident bird, noted regularly throughout the winter and spring. A nest was found in an immense pine tree, built far out on the end of a limb overhanging the water, about forty feet up, and inaccessible by ordinary means. When visited on March 23 it probably contained eggs, judging from the actions of the parents, which kept hovering around, and on April 16 we could hear the young calling.

LITTLE BLUE HERON. *Florida caerulea.* Probably a summer resident here, but we found no evidences of its breeding. The first was seen on March 21, and a flock of twelve the next day. Occasional small parties and single birds were seen through most of April, and again on May 5, at Horseshoe Bayou. Only one speciment was secured.

GREEN HERON. *Butorides virescens virescens.* Not uncommon as a summer resident, although not actually found breeding. It was first observed on March 19, and thence up to the end of our stay, usually along the creeks. The two males secured are obviously darker and more richly colored below than the five females.

BLACK-CROWNED NIGHT HERON. *Nycticorax nycticorax naevius.* Rare; one was seen on May 13.

KING RAIL. *Rallus elegans elegans.* One was put up in the high marsh grass along the shore of the bayou on March 30, but was not

brought to bag. Its haunts and habits are such that it is probably more common than this single record would indicate. It probably breeds here.

Sora Rail. *Porzana carolina.* The Sora Rail probably passes the winter here, occasionally at least, since one was seen on December 18, but it was not again recorded until April 20, and then on April 27 and May 4, and lastly on May 7. The remarks on the last species apply to this one also.

Coot. *Fulica americana.* An abundant winter resident, found in flocks of hundreds along the shores of the Bay, where it feeds on the seeds of the rushes growing in the shallows, and often straggling up the bayous and the streams, especially in windy or stormy weather. It was already common on our arrival on November 8, and was seen last (a single bird) on April 28.

American Woodcock. *Rubicola minor.* A single individual was seen on May 9, which would indicate that the species breeds in this vicinity, as it is known to have young much earlier than this at other points on the Gulf Coast.

Wilson's Snipe. *Capella delicata.* A winter resident, apparently of rare occurrence. One was seen on February 9, a party of three February 20, and one April 1.

Semipalmated Sandpiper. *Ereunetes pusillus.* A party of five small sandpipers, identified as this species, passed over Alaqua Bayou on May 11, just out of gunshot, flying northward.

Sanderling. *Crocethia alba.* A small flock, out of which three individuals were secured, was noted on the Gulf beach May 5, and a single bird was with the flock of Semipalmated Sandpipers referred to as having been seen May 11. The three specimens secured were all females, undergoing the prenuptial molt.

Solitary Sandpiper. *Tringa solitaria solitaria.* A spring transient, for which there are only four records, the first on April 25 and the last on May 11.

Spotted Sandpiper. *Actitis macularia.* A common transient, noted first on April 3, and last seen on May 15.

Killdeer. *Oxyechus vociferus vociferus.* Rather common for a time (January 19-February 26) on the shores of the outer bay, but not noticed during the breeding season.

Cuban Snowy Plover. *Charadrius nivosus tenuirostris.* One shot on the Gulf beach on May 5 was our only note for this species, which has already been recorded by Cherrie (*Auk*, XIV, 1897, 402) as com-

mon and breeding on the outer beach of Santa Rosa Island, a few miles away. The specimen is strikingly different from a series of true *nivosus* from the Pacific Coast, the pileum and upper parts being soiled white, and the whole appearance of the bird, as well as its separated range, suggests its specific distinctness from that form. Its light coloration harmonizes well with the glistening white beaches which it inhabits.

Bob-white. *Colinus virginianus virginianus.* An abundant resident, equally common in the cultivated fields and the open pine barrens, but usually taking refuge in the thicker growth along the streams whenever pursued. The farmers complained that the "partridges," as they called them, were in the habit of eating their garden peas. The series secured are typical of *virginianus*, and show no approach toward the race *floridanus* of peninsular Florida.

Wild Turkey. *Meleagris gallopavo silvestris.* A tolerably common resident species. A flock of about a dozen birds which haunted the vicinity were in the habit of coming into the fields, within sight of the dwellings, to feed. The single specimen secured compares favorably with northern examples.

Mourning Dove. *Zenaidura macroura carolinensis.* Common throughout the winter. A few probably breed, since some were noted as late as April 22.

Turkey Buzzard. *Cathartes aura septentrionalis.* A common resident; probably breeds.

Black Vulture. *Coragyps urubu.* Common throughout the winter probably breeds.

Swallow-tailed Kite. *Elanoides forficatus forficatus.* Not common, and its exact status here unknown. Four were seen on March 7, flying high in the air, two on March 9, and one on March 18.

Mississippi Kite. *Ictinia mississippiensis.* The first individual of this species was noted on April 15, and a few at intervals thereafter up to May 15, so that it doubtless breeds here. It was usually observed perched on the top of some tall dead tree, and did not seem particularly shy. Three specimens were secured.

Marsh Hawk. *Circus hudsonius.* One was seen on February 11.

Sharp-shinned Hawk. *Accipiter velox.* Occasional through the winter, single individuals having been seen at intervals up to March 12.

Cooper's Hawk. *Accipiter cooperi.* Only one seen (March 5).

Red-shouldered Hawk. *Buteo lineatus lineatus.*

Florida Red-shouldered Hawk. *Buteo lineatus alleni.* The species was of fairly common and regular occurrence during our stay, and was usually seen in the rich growth along the streams. Of two specimens secured, one is a typical, even an extreme, example of *lineatus*, while the other is better referred to *alleni*. The latter must be the breeding form of the region.

Bald Eagle. *Haliaeetus leucocephalus leucocephalus.* Not infrequently observed throughout the winter, from December 23 up to as late as May 5, when it was seen at the Horseshoe Bayou. It probably breeds, but no evidence on this point was uncovered.

Sparrow Hawk. *Falco sparverius sparverius.* Rather common during the winter months, and noted regularly from November 17 to March 16. The specimens taken are all typical *sparverius*, and two of the males have the rufous crown-spot reduced to a mere trace.

Osprey. *Pandion haliaetus carolinensis.* A resident species, but more conspicuous than common. One pair were nesting on Alaqua Bayou, and they remained in its vicinity all winter. On February 20 four were seen, evidently migrating individuals, and a very few others at intervals. A nest was found at Horseshoe Bayou on May 5.

Florida Barred Owl. *Strix varia alleni.* Five individuals were noted, two of which were secured, between December 22 and March 28.

Florida Screech Owl. *Otus asio asio.* A resident species, but far from common. One was shot December 12, in a grove of young pines in the barrens, and another May 5, at dusk, in shrubbery near a stream.

Great Horned Owl. *Bubo virginianus virginianus.* A resident species, noted but once (March 30) on the northern side of the Bay, and again at Horseshoe Bayou on May 4.

Yellow-billed Cuckoo. *Coccyzus americanus.* A common spring migrant; probably breeds. It was noted first on April 20, became common on April 25, and continued so to the end of our trip.

Belted Kingfisher. *Ceryle alcyon alcyon.* A winter resident, noted regularly from November 18 to April 29.

Southern Hairy Woodpecker. *Dryobates villosus auduboni.* A rather common resident. The series taken indicate that in this southern race there is a marked tendency toward a division of the red nuchal crescent of the male into two spots.

Southern Downy Woodpecker. *Dryobates pubescens pubescens.* Like the last a resident species, but more common. The series secured are very uniform in their color and markings—much more so than the northern form.

RED-COCKADED WOODPECKER. *Dryobates borealis.* This is the common woodpecker of the open pine barrens. A nest was found April 1 in a living pine, but whether with eggs or young was not determined. Specimens shot in December and January were in fine fresh plumage, but by the end of March the feathers of the lower parts had become soiled from contact with the tree-trunks. Variation in the amount of black spotting on the outer rectrices is evident in the series.

YELLOW-BELLIED SAPSUCKER. *Sphyrapicus varius varius.* A common winter resident, noted regularly from November 13 to March 30. A pair of young birds taken as late as March 4 were still largely in juvenal dress. Females appear to have more yellowish white on the outer rectrices than males.

PILEATED WOODPECKER. *Phloeotomus pileatus pileatus.* A tolerably common resident, haunting the mixed woodland along the Alaqua River and its tributaries. Four specimens were taken.

RED-HEADED WOODPECKER. *Melanerpes erythrocephalus.* This species was not observed during the winter months, nor indeed until April 15, not becoming common until a month later.

RED-BELLIED WOODPECKER. *Centurus carolinus.* A common resident. This and the last species feed very largely upon mulberries in season, and together with the Summer Tanager, contrive to keep the trees so well stripped that it is scarcely possible for the owners to get any of the ripe fruit for their own use.

FLICKER. *Colaptes auratus auratus.* A common resident. Specimens compare favorably with others from peninsular Florida.

NORTHERN FLICKER. *Colaptes auratus luteus.* A pair of birds shot January 23 come within the range of measurements assigned to this race, which in our opinion rests upon very slender characters indeed, and is scarcely entitled to recognition by name. These individuals were doubtless winter visitants from farther north.

CHUCK-WILL'S WIDOW. *Antrostomus carolinensis.* A tolerably common summer resident, but more often heard than seen, keeping mostly to the drier parts of the woods and thickets, and coming out into more open spots at dusk. Efforts to secure specimens at such times did not bear fruit, owing to the brief duration of twilight in this latitude, and to the difficulty of locating the singing birds even when close. Their call is deceptive in intensity, appearing to come from near by even when the birds are really at some distance. They are more apt to be active and vociferous somewhat earlier on a dark, cloudy evening. When flushed in the daytime they invariably alighted on trees. The first individuals were noted on April 10.

WHIP-POOR-WILL. *Antrostomus vociferus vociferus.* This species appears to be occasional in winter, having been noted twice, November 18 and February 17, and secured on the latter occasion.

NIGHTHAWK. *Chordeiles minor minor.* Common in spring migration. Nighthawks were noted first on April 7, but whether of this form or the next it is impossible to say, as none were secured on that date, or indeed until April 23. The last bird of the present form was shot May 2.

FLORIDA NIGHTHAWK. *Chordeiles minor chapmani.* Two specimens of this, the summer resident form, were taken, on April 24 and 25 respectively. Nighthawks of both forms were fond of alighting on a sandy road where it crossed an open space. Even at this season they were excessively fat.

CHIMNEY SWIFT. *Chaetura pelagica.* First noted in spring migration on April 13, and common by April 20.

RUBY-THROATED HUMMINGBIRD. *Archilochus colubris.* This species was noted on March 10 and 13, which is certainly an early date of arrival, if indeed it does not suggest wintering. It was seen again on April 9 and 23, but seems to be a rare bird here.

SCISSOR-TAILED FLYCATCHER. *Muscivora forficata.* A single bird of this striking-looking species was seen and positively identified on May 15, but not secured. It is of course merely a straggler so far east, although there are several other records from Florida and one from Alabama, and it is rare in Louisiana.

KINGBIRD. *Tyrannus tyrannus.* A common summer resident, whose arrival was recorded on March 28. Specimens taken here are entirely similar to northern examples.

CRESTED FLYCATCHER. *Myiarchus crinitus.* A common transient and presumable summer resident, first seen on April 1. A series of fifteen specimens were secured, which are indistinguishable from northern birds. We are unable, after examination of considerable pertinent material, to verify the characters claimed for the supposed race *boreus* by Mr. Howell (Birds of Alabama, 1924, 187).

PHOEBE. *Sayornis phoebe.* Rather common as a winter resident, from the time our work began until March 17. Specimens taken at this latter date had already lost most of the yellowish bloom below which characterizes the fresh winter plumage.

WOOD PEWEE. *Myiochanes virens.* This is no doubt a summer resident here, as it is in adjacent parts. Its arrival was recorded on April 4, and it was common before the end of the month.

ACADIAN FLYCATCHER. *Empidonax virescens.* Doubtless a summer resident species, and rather common, frequenting the swampy forest along the streams. April 6 was the date of its recorded arrival.

FLORIDA BLUE JAY. *Cyanocitta cristata cristata.* A resident species, very common. Jays from this region average rather darker-colored than those from peninsular Florida, but the latter vary a great deal among themselves. One specimen (No. 11.817), indeed, has the under parts decidedly suffused with purplish blue.

FLORIDA CROW. *Corvus brachyrhynchos pascuus.* A resident species, not very common. We are informed that as a result of a bounty on Crows, paid a few years before, large numbers had been shot and poisoned, which would account for their reduced numbers.

The single specimen secured is a female, which we are unable to distinguish satisfactorily from specimens from peninsular Florida. Mr. Howell has proposed to call the Crows of Alabama by another name, *paulus*, on account of their relatively smaller size, but if the (admittedly scanty) material before us is at all representative we see no need for this innovation.

FISH CROW. *Corvus ossifragus.* A few were seen in November, February, and March, and in April they became rather common, but were very shy.

BOBOLINK. *Dolichonyx oryzivorus.* A spring transient, not common, observed only from May 3 to May 6.

FLORIDA RED-WINGED BLACKBIRD. *Agelaius phoeniceus phoeniceus.* Red-wings of one form or another were common throughout the winter months, and some that were seen at Horseshoe Bayou on May 4 must have been *phoeniceus.* The series of specimens from Whitfield are difficult to place. Some have the stout bill and long wing of the northern form, to which we are compelled to refer them. Others have the wing almost or quite as long as the northern form, but the bill is long and slender, while others still have short wings and a rather short bill. Unfortunately, none are breeding birds.

RED-WINGED BLACKBIRD. *Agelaius phoeniceus predatorius.* Four specimens (December 30-March 23) we would refer to this race with but little hesitation; although their middle wing-coverts are deeper buffy than any of the northern birds, this is probably due to season, while in other respects they agree better with *predatorius.* They were doubtless birds which had come from the north.

SOUTHERN MEADOWLARK. *Sturnella magna argutula.* A common resident, frequenting the more open situations. A nest with five eggs

was found at Horseshoe Bayou on May 5. It was built in the low grass a little back from the wet marsh, and scarcely protected from view, save by its being partially domed over. The song of the Meadowlark here differs decidedly from that one hears in the north; it is weaker, and sounds as if it were cut off before coming to the end.

The *Sturnella* of peninsular Florida differs from the northern bird as said by Mr. Bangs, and is doubtless separable, as he claims. But the series from Whitfield, taken from November 18 to March 19, are certainly very puzzling, presenting as they do different combinations of characters in varying degree. Some are nearly or quite as large as northern birds, while others are as small as the average specimen from peninsular Florida. But the smallest specimens are not always the darkest, nor the largest the lightest colored. There is no assurance, moreover, that the series secured correctly represent the breeding bird of the region, since eggs were not taken here until early in May, while the latest specimen collected is dated March 19. There is an astonishing difference in the condition of specimens taken at the same time, some individuals showing the pure yellow under parts and sharply defined black collar of the breeding dress, while others have these parts and the collar heavily veiled with buffy, as regularly found in winter plumage. It may be a matter of age.

Dr. Chapman (*Bull. Am. Mus. Nat. Hist.*, XIII, 1900, 300) thinks that *argutula*, if recognized at all, should be restricted to the bird of peninsular Florida, but Mr. Ridgway does not accept this conclusion at all, but instead follows Mr. Bangs in using the name for the bird of the Austro-riparian Zone in the eastern United States (except for a part of Texas). The type-locality of *magna* (South Carolina), however, lies within this Zone, and it will therefore be necessary to further limit the assigned range—unless, indeed, South Carolina birds turn out to belong to the southern form, which is denied by Mr. Bangs and by Mr. Arthur T. Wayne.

Orchard Oriole. *Icterus spurius*. A common summer resident; seen first on April 7, and common on April 9, when it was observed in the scattered bushes in the swamp at the mouth of the Alaqua River. A specimen secured April 16 shows the stage of plumage in which the young male reaches the United States. Three other specimens, April 25 and 28 and May 13, are progressively more worn. All of them have scattering black feathers about the head, and all but one a few chestnut feathers below. No. 13,015 has the central rectrices extensively black—which we regard as an indication of individual precocity. No. 12,995, April 25, a male emerging into the second nuptial plumage,

still has a few greenish feathers about the head, widely greenish-tipped rectrices, and the lower abdomen and tibiæ somewhat buffy. No. 12,958, April 21, a male in third (or later) nuptial plumage, shows the pale feather-tipping of the winter dress in process of wearing off, leaving the bird plain black and chestnut in "solid" areas, the rectrices narrowly tipped with buffy, and the remiges edged externally with greenish buffy (very pale).

Baltimore Oriole. *Icterus galbula.* One was observed on April 16.

Florida Grackle. *Quiscalus quiscula quiscula.* This bird may be a resident species here, but it was not recorded until February 24, becoming common a few days later. Ten specimens secured are very uniform in color, the head, throat, and breast in the males varying only from steel blue to violet with slight purple reflections.

Boat-tailed Grackle. *Megaquiscalus major major.* This species was not detected on the north side of the bay, but at Horseshoe Bayou on the south side a flock of about twenty birds, mostly females, was encountered on May 4, as they were evidently about to go to roost, and two specimens were secured.

American Goldfinch. *Astragalinus tristis tristis.* A winter resident, apparently rare; two were noted on January 5 and one on January 22.

Vesper Sparrow. *Pooecetes gramineus gramineus.* A common winter resident from November to March 30. In specimens taken in November the rich colors of the freshly acquired winter dress are still evident, although less marked, while the series that follows illustrate beautifully the gradual loss of these colors by wear through the winter months, until by the end of March they have almost entirely vanished, leaving the birds as they appear upon reaching their summer home in the north.

Savannah Sparrow. *Passerculus sandwichensis savanna.* Not uncommon throughout the winter, from November 17 up to March 31.

Grasshopper Sparrow. *Ammodramus savannarum australis.* Noted only during the spring migration, between March 17 and 31, and not at all common. It may winter here, and probably breeds.

Henslow's Sparrow. *Passerherbulus henslowi.* This species appears to be a rather common winter resident, although difficult to collect by reason of the nature of its haunts and its shy and retiring habits. Ten specimens were secured, however, between December 4 and February 9. These are of course in fresh winter plumage, with the feathers of the back and scapulars prominently margined with white, producing

a squamate effect. The attempt to identify the series subspecifically led to results which are at variance with those published by Brewster a few years ago (see *Proc. New England Zool. Club*, V, 1918, 77-79), and which have not been questioned since. This author undertook to separate the Henslow's Sparrow of the Atlantic Coast from that of the interior, describing the former under the name *susurrans*, taking as the type-locality for it Falls Church, Virginia. But after having compared nine birds from Illinois and Wisconsin with an equal number from Washington, D. C., and vicinity, we can find no grounds whatever for separating the respective series as distinct races, for while there is some variation apparent, it is certainly not geographical. At any rate, it is impossible to find any distinctive characters whereby these winter birds can be recognized, or their summer range determined.

Dr. Oberholser (*Ohio Journ. Sci.*, XVII, 1917, 335) has proposed to separate this species generically under the name *Nemospiza*, on account of its stouter bill and shorter outer primary. Although these characters are evident, they do not appear to us to constitute sufficient grounds for keeping this species generically distinct from the Leconte's Sparrow, to which it is certainly very closely related, and with which it agrees in the shape of the rectrices, the proportions of the feet, and the pattern of coloration.

White-throated Sparrow. *Zonotrichia albicollis.* Not common as a winter resident, and noted only between December 3 and March 11.

Chipping Sparrow. *Spizella passerina passerina.* A winter resident, abundant about the houses and clearings from November 20 to March 28. Of the specimens secured two, shot January 30 and February 6, have the pileum almost solid chestnut, as it is normally later in the season. Two others, dated March 17 and 21, show molt going on around the head and neck.

Field Sparrow. *Spizella pusilla pusilla.* A common winter resident from November 10 to March 30.

Bachman's Sparrow. *Peucaea aestivalis bachmani.* A fairly common resident species, haunting the pine barrens. In its habits it is inconspicuous and secretive, preferring to run and hide in the grass and bushes, but occasionally, when hard pressed, alighting in the shrubbery. It has a beautiful song (heard but once), reminding one strikingly of that of the Vesper Sparrow, but longer and sweeter. A series of specimens were collected between December 16 and April 1, showing comparatively little wear until the latter date.

"Florida" Song Sparrow. *Melospiza melodia beata.* A rather common winter resident, last noted on March 24. As will be shown

in another connection, the name *beata* of Bangs, applied by him to a form supposed to breed in Florida, must be taken for the Song Sparrow of the region west of the Appalachian Mountains. The series from Whitfield (twelve specimens, the latest dated March 14) unquestionably belong to the present race.

Swamp Sparrow. *Melospiza georgiana.* Like the last this is a common bird in the winter in its chosen haunts. The first was noted on November 19, and the last April 28. Examples shot during April show feather renewal going on about the head and throat. We find no winter birds with solid chestnut crowns, although the pattern of this part varies a good deal.

Towhee. *Pipilo erythrophthalmus erythrophthalmus.* An extremely interesting series of Towhees, coming as they do from a point east of the type-locality of the supposed race *canaster* Howell (Mobile, Alabama), were taken between November 24 and April 10. Most of these are easily referrable to the typical race, and probably represent winter migrants from the north, but they grade down from this type to birds that are only arbitrarily distinguishable from *alleni.*

White-eyed Towhee. *Pipilo erythrophthalmus alleni.* This is the resident race of Towhee, and is common, associating with the other form during the winter months. The series collected, comprising twenty specimens, are not typical, at least as compared with skins from peninsular Florida, the birds being a little larger, and having more white on the tail. In fact, there is an unbroken series connecting the northern bird with *alleni* represented in the Towhees from this locality, but only a few of those here referred to *alleni* approach the measurements of *canaster* as given by Mr. Howell. This supposed form seems to have been based on intergrades between *erythrophthalmus* and *alleni*, and we do not consider that there is room for such an intermediate race. Nos. 13,096-7, May 14, are undoubtedly breeding birds, and while they are not typical *alleni*, we would refer them thereto without question. Mr. Howell has described *canaster* as having the females more grayish, less brownish above than those of *alleni*, but there is much variation in this respect even in the northern bird, although *alleni* averages grayer than the other in the female, and the smaller specimens from Whitfield agree with it in this respect. Only one of the specimens is marked as having red eyes.

Actual examination of a small series from Alabama (four of each sex, kindly loaned by the Bureau of Biological Survey) confirms in general the above impressions. The Whitfield birds are nearer *alleni*, while Alabama birds are a step nearer the northern form, the females

at least having more white on the tail. The desirability of recognizing these intermediate examples under a separate name is not obvious. The size is not especially different, considering that the specimens examined are all fully adult.

Cardinal Grosbeak. *Richmondena cardinalis cardinalis.* A common resident. We cannot see that the series secured bear out any of the characters assigned by Mr. Bangs to the supposed form from Louisiana (*Proc. New England Zool. Club*, IV, 1903, 5-7). It is true that they exhibit much individual variation, particularly as regards the exact shade of the red in males. No. 11,607 is the palest (pale rose doree below) and No. 12,479 is one of the darkest. Females which are washed with red below usually have some red feathers on the fore part of the crown as well.

Rose-breasted Grosbeak. *Hedymeles ludovicianus.* One was noted in migration on May 15.

Scarlet Tanager. *Piranga olivacea.* A rare transient; one was noted May 13.

Summer Tanager. *Piranga rubra rubra.* A common summer resident, keeping mostly to the pines. Its arrival was recorded on March 19, but it did not become common until April. Its song lacks the roughness of that of the Scarlet Tanager, and reminds one strongly of that of the Rose-breasted Grosbeak.

Purple Martin. *Progne subis subis.* A summer resident, common locally, first seen (and secured) as early as February 18, but the bulk not arriving until a month later.

Cliff Swallow. *Petrochelidon lunifrons lunifrons.* This is merely a transient visitant, noted from April 15 to 23, and not common even then.

Barn Swallow. *Hirundo rustica erythrogaster.* Common as a spring migrant. It was first noted on April 14, when it was found coursing over the marsh at the mouth of the Alaqua River, in company with the Bank Swallow. May 11 was the latest date of record. On May 4 we encountered Barn Swallows in immense numbers at Horseshoe Bayou, coursing over the marsh, and feeding as long as there was sufficient light. Just at dusk there was a commotion among them; they gathered together in a rather compact flock, mounted high in the air, and sailed off to the northward. This was evidently a migration flight, but this is one of the birds which has been supposed to migrate exclusively by day.

The small series taken were shot between April 14 and 23. The color of the under parts is variable, but probably the older the bird is the more richly colored it becomes. No. 12,913 is nearly or quite as deeply colored as *H. rustica tytleri*, and in No. 12,975 the pectoral collar is virtually complete.

TREE SWALLOW. *Iridoprocne bicolor*. A small flock was seen flying southward on November 29, but otherwise this species was not observed until March 22, becoming common the following day. April 23 was the latest date of observation.

BANK SWALLOW. *Riparia riparia riparia*. Noted as a transient in the spring, arriving on April 14, and common on April 17. In every case it was found flying over the water, or over the marsh at the mouth of the Alaqua River.

ROUGH-WINGED SWALLOW. *Stelgidopteryx serripennis*. Rather common, and doubtless a summer resident here as in neighboring parts. March 14 is the recorded date of its arrival. Like the Bank Swallow, it was invariably found near the water.

CEDAR WAXWING. *Bombycilla cedrorum*. Not observed in the winter months, but quite frequent in the spring, from March 8 up to as late as May 15. It occurs in flocks, wandering through the woodland; one such flock was found that must have contained one hundred birds or more.

LOGGERHEAD SHRIKE. *Lanius ludovicianus ludovicianus*. A resident species, fairly common, and noted regularly from November to May.

RED-EYED VIREO. *Vireosylva olivacea*. No doubt this is a summer resident, having been observed as late as May 8. The first was noted and secured on March 19. The small series taken show considerable variation in size.

YELLOW-THROATED VIREO. *Lanivireo flavifrons*. One was identified on April 16. A rare transient.

BLUE-HEADED VIREO. *Lanivireo solitarius solitarius*. Only two specimens clearly belonging to this, the typical race, were taken, on December 19 and April 28 respectively, the latter being a late date. It occurs of course as a winter resident, but is rare.

MOUNTAIN SOLITARY VIREO. *Lanivireo solitarius alticola*. Six specimens of this race were taken, at dates ranging from January 1 to March 9. These have been compared with a series of breeding birds from the southern Alleghanies in the Brewster Collection, and with a few fall birds from the same region, and, allowing for different degrees

of wear, etc., they seem to agree fairly well. This race averages larger than true *solitarius*, with more gray on the back, darkening the green of the upper parts. This latter feature, however, is more noticeable in worn breeding dress than at any other time. Some of the above have smaller bills than others, but the balance of the characters they show favors their reference to *alticola*, which evidently mingles with the typical form at this season in this region.

Southern White-eyed Vireo. *Vireo griseus griseus*. A common summer resident, haunting the bushy thickets and the margin of the woods. A series of nineteen specimens were collected between February 26 and May 14, and will be made the text for a few remarks. They are very uniform, and differ conspicuously from northern birds in the pallor and restriction of the greenish yellow of the sides and flanks; the green of the upper parts is duller, and the yellow frontlet and superciliaries not quite so bright. They thus agree with the description of *maynardi*, described from Key West, which is supposed to be confined to southern Florida. From this latter region we have been able to examine a good series of specimens, including ten from Key West. These were shot in March, and are therefore strictly comparable with the Whitfield series (in large part). As a series the former are perhaps a trifle paler below, the throat and breast whiter, with less of a grayish cast, but the difference is very slight, and in my judgment not sufficient to justify calling them by a different name. This determination brings the range of *maynardi* suspiciously close to the type-locality of *Tanagra grisea* Boddaert, which is "Louisiana." Through the courtesy of Mr. Edward S. Hopkins, of the Louisiana Department of Conservation, we have been able to compare our series directly with specimens from that State. A pair of birds shot April 2, and which therefore probably represent the breeding form, prove to be absolutely indistinguishable from our series from western Florida. (A breeding bird from Clinton, Louisiana, in the collection of the American Museum of Natural History, is likewise similar). Moreover, Buffon's Plate 714, figure 1 of the *Planches Enluminees*, which is the basis Boddaert's name, agrees much better with this resident race of Louisiana and Florida than with the northern form. This should suffice to fix the name, even although the northern form is known to occur in migration in Louisiana, as is proved by a pair of birds shot September 9, and which are easily referable thereto. Accordingly, it will be necessary to alter the present arrangement of the races of this species. *Vireo griseus maynardi* (Brewster) thus becomes a synonym of *Vireo griseus griseus*, and *noveboracensis* of Gmelin will again become available for the

northern bird, this time in a subspecific sense. Our measurements indicate that *griseus* averages *smaller* than *noveboracensis*, not larger, as said by Mr. Ridgway (in his diagnosis of *maynardi*). In view of this fact the status of the supposed form *micrus* requires re-investigation. Specimens from Texas in the collection of the American Museum of Natural History are smaller and paler than Florida examples, but neither of these characters is very well marked. Breeding birds from Summerville, South Carolina, in the same collection, agree best with the Key West series, and indicate that the range of *griseus* extends at least that far north on the Atlantic coast. The English name "Key West Vireo" is so inappropriate under the circumstances that we would suggest that it be changed to "Southern White-eyed Vireo."

Black and White Warbler. *Mniotilta varia*. Rare in spring migration; noted on March 23, April 10, and April 23.

Prothonotary Warbler. *Protonotaria citrea*. In the bushes and shrubbery along the streams and about the stagnant pools this warbler was a common species. As we drifted along in our small boat we often flushed the birds close to the water's edge, the brilliant yellow of their plumage standing out against the background like a flash of gold. Although favoring these shady nooks, and usually keeping low down, one would occasionally mount to the top of a tree and give utterance to a song which resembled that of the Black and White Warbler, but was much shorter, consisting of only about four notes. The first was seen on March 23, and on April 13 a female was discovered building a nest, which was collected on April 29, at which time it held five fresh eggs. It was built in a hollow stub, about two feet directly over the water of a stream. The eggs were white, richly marked with reddish brown blotches, in the usual warbler style.

Swainson's Warbler. *Limnothlypis swainsoni*. This was one of the few species we had hoped to meet in this region which actually came up to expectations. The first was noted on April 4, and during the course of the next week or ten days it became fairly common. Its favorite haunts are the dense thickets on the edge of the lowland woods, where it contrives to keep so well concealed that were it not for its characteristic song its presence would go unsuspected. It is fond also of rank fern growth, where it is equally successful in eluding observation and capture. Only once did we find it in the dry upland, among the thick scrub oaks. The birds spend most of their time on the ground among the dry leaves, walking along gracefully, like the Oven-bird, and uttering their song at frequent intervals. The song is so loud that it can be heard at a considerable distance; it reminds one some-

what of that of the Water-Thrush, but is more musical. Virtually all of the individuals secured were taken by following up the singing birds, and waiting for them to come into sight. So long as they kept on the ground while singing, as they mostly did, it was next to impossible to catch a glimpse of them, but occasionally one would mount on a low bush to perform, and once we discovered a singing male perched on a tree, twenty-five feet up, but this must have been exceptional. Towards the end of our stay it became more easy to "squeak" the birds up into view, possibly because of the onset of the breeding season, and some females were thus taken, but we were not successful in discovering any nests. Special effort was made to secure this species, and twenty specimens were collected. The color of the pileum varies in this series from buffy brown to tawny olive to raw umber, with an indication of a median frontal streak of paler; the under parts in some specimens are pure yellowish, and in others soiled yellowish.

Worm-eating Warbler. *Helmitheros vermivorus.* One shot April 27 was the only record for this species, which must be merely a migrant here.

Bachman's Warbler. *Vermivora bachmani.* This species, which we had hoped to find at least as common as Messrs. Brewster and Chapman did on the Suwanee River, not so far to the eastward, proved to be one of the rarer kinds here. Only three specimens were secured, on March 9, 10, and 27. The locality must be out of its usual line of migration.

Blue-winged Warbler. *Vermivora pinus.* Another rare species, included in the list on the strength of a single specimen shot April 24—no doubt a transient.

Orange-crowned Warbler. *Vermivora celata celata.* This warbler appears to be a winter resident here, as it is in peninsular Florida, but it is not a common bird. Only two specimens were actually secured, on December 19 and February 9 respectively; like other Florida examples we have seen they are dull colored. A third individual was noted on March 27.

Tennessee Warbler. *Vermivora peregrina.* One shot April 15 was our sole record for this species.

Parula Warbler. *Compsothlypis americana americana.* A common species, no doubt a summer resident, although we did not chance to find any nests. Its favorite haunts were the live oaks and other hardwood trees along the watercourses, usually keeping rather high up,

and where at times it was exceedingly numerous. A good series were collected, some of which, as for instance Nos. 12,868 and 12,870, could be referred to *pusilla* without doing violence to the facts, but taking the series as a whole it is distinguishable on an average from a series of northern birds. The earliest date represented is March 9, the latest May 13, when the species was most likely breeding. It is of course conceivable that some of the above were migrating individuals, but in view of the fact that so few transient species were detected at this locality, and that birds taken early in the season are precisely like those shot later on, we infer that they belong to one and the same form, the resident form of this region. No doubt the name *americana* may be justifiably restricted to designate this small, pale resident race, which probably does not go beyond Florida in the winter, while *pusilla* regularly visits the West Indies.

Yellow Warbler. *Dendroica aestiva aestiva.* Unaccountably rare here as a transient, a very few having been noted between April 17 and 25, in every case in shrubbery along the water's edge.

Myrtle Warbler. *Dendroica coronata.* This and the Pine Warbler were the only really abundant warblers during the winter months. The present species was noted as early as November 17, but may have been present sooner, while the last was recorded on April 27. Migrating flocks were repeatedly observed during April. The entire series collected (November 17-March 28) are in winter plumage, and only birds shot on March 27 and 28 show any signs of molt.

Yellow-throated Warbler. *Dendroica dominica dominica.* A common summer resident, found mostly in the pine lands, but which occasionally enters the gardens and hardwood timber. It was first seen on February 26, and was in full song in March and April. Its song suggests that of the Yellow Warbler in timbre, and that of the Black and White Warbler in style, but with the latter part much run together. The fine series secured were taken between February 26 and May 1, the latter date being represented by a bird in juvenal dress—which circumstance shows how it happens that the species can molt so early and start on its southward journey by July. Males vary considerably with regard to the amount of black on the pileum, some few having the whole crown almost "solid" black. The yellow loral spot is very faintly developed in some.

Pine Warbler. *Dendroica pinus pinus.* An abundant resident species, confined to the pine barrens. A nest was found in process of construction on March 26, far out on the end of a horizontal limb of

a pine, close by our house. Between November 17 and May 14 an unusually fine series of this species were secured, fifty-five specimens in all. This lot of skins admirably illustrates the gradual change from the winter to the breeding dress through wear, the effect of which is to bring out the colors in greater purity and then to dull them through fading as the season progresses. The streaking below is more prominent in spring specimens also. Four young in full juvenal dress are dated April 30, confirming the above observation on the early nesting of the species here.

Palm Warbler. *Dendroica palmarum palmarum.* Specimens of this race were shot November 18, December 15 and 30, February 18, March 9 and 25, and April 11. It is thus a winter resident here, as well as in southern Florida, but is not so common as *hypochrysea*, from which it is doubtfully distinguishable in life.

Yellow Palm Warbler. *Dendroica palmarum hypochrysea.* Seventeen specimens were shot between November 21 and March 25. This seems to be the commoner form of the Palm Warbler here during the winter months. A female taken on the last date is the only one showing any signs of molt.

Prairie Warbler. *Dendroica discolor.* Rare in the spring; a few records from March 25 to April 23.

Oven-bird. *Seiurus aurocapillus aurocapillus.* One was identified but not secured on January 21, this constituting a rather unusual winter record. A second example taken on April 30 was the only other instance of its occurrence that came under our notice.

Kentucky Warbler. *Oporornis formosus.* Noted a few times between April 20 and May 2, and apparently not common, although these dates would indicate that it breeds here. It was always seen in damp, shady woods near the streams.

Maryland Yellow-throat. *Geothlypis trichas brachidactyla.* A female shot on February 14 is referred to this race, which is a winter visitant from farther north.

Florida Yellow-throat. *Geothlypis trichas trichas.* This is the common and resident form of Yellow-throat in this region. A series of specimens collected between December 17 and April 25 are easily distinguishable from winter birds from the north by their deeper, richer coloration, different wing-formula, and relatively longer tails. We doubt very much if this form ever migrates to Cuba, as Messrs. Ridgway, Howell, and others seem to think, and the alleged extra-

limital specimens should be re-examined. (Cf. Todd, *Annals Carnegie Museum*, X, 1916, 261).

If it is true that this is the resident race on the coast of South Carolina, as there is every reason to believe, this region being the type-locality for the *Turdus trichas* of Linnæus, we can see no reason why the shift in the names proposed by Dr. Chapman, but unceremoniously turned down by the A. O. U. Committee, should not be accepted (cf. *Auk*, XXIV, 1907, 30-31). Aside from this proposal, we can discover absolutely no grounds for the recognition of "*brachidactyla*."

Hooded Warbler. *Wilsonia citrina*. A common summer resident, frequenting the same kind of covert as the Prothonotary Warbler, although not confined so closely to the edge of the streams as that species. It was first noted on March 23, and by April 2 had already become common and musical.

American Pipit. *Anthus rubescens*. Not uncommon as a winter resident, from November 26 to February 26. Specimens taken in February are much duller than tho e shot in December and January, and more worn.

Mockingbird. *Mimus polyglottos polyglottos*. An abundant resident, and in bad favor with the farmers because of the damage it is said to do to grapes and other fruits. The series show much variation in the pattern and extent of the dusky markings on the outer rectrices, scarcely any two specimens being exactly alike in this respect.

Catbird. *Dumetella carolinensis*. Found sparingly through the winter, but not common even in the spring. A nest was found on May 9.

Brown Thrasher. *Toxostoma rufum rufum*. This is a not uncommon bird during the winter months, but none were observed later than April 30, and it is not clear whether it breeds here or not. One seen March 27 was in full song.

Carolina Wren. *Thryothorus ludovicianus ludovicianus*. A rather common resident. The specimens taken are all easily referable to the typical form, some of them being extreme in their paleness.

Bewick's Wren. *Thryomanes bewicki bewicki*. One seen on December 17 was the only record for this species.

House Wren. *Troglodytes aedon aedon*. Common throughout the winter, from November 8 to April 17. Since it has not yet been reported from Alabama, this occurrence is worthy of remark. Seventeen specimens were secured, which are clearly referable as a series to the typical race, though a few of them tend somewhat toward *parkmani*.

Short-billed Marsh Wren. *Cistothorus stellaris.* A not uncommon winter resident, but from the nature of its haunts difficult to secure. It keeps in the thickest bushy and weedy growth along the edge of marshy ground, where it skulks and hides with ease and success. Six specimens were taken, the first on December 9, and the last on May 5 at the Horseshoe Bayou—a late date.

Long-billed Marsh Wren. *Telmatodytes palustris palustris* (?). Two specimens shot March 17, the day the species was first noticed, are doubtfully referred to this form. They are whitish below, but above are almost as pale as specimens of *paludicola*, and cannot be matched by eastern specimens, even those taken much later in the season being appreciably darker. Marsh Wrens became common on March 27, but whether of this form or the next cannot be said. They were plentiful in the marsh at the mouth of the Alaqua River, but were shy and unusually difficult to secure.

Marian's Marsh Wren. *Telmatodytes palustris marianae.* A pair were shot in the marsh on April 18, both in molting condition. These were examined some years ago by Dr. H. C. Oberholser, who pronounced them *thryophilus* (cf. Ridgway. *Bulletin U. S. National Museum*, No. 50, III, 753), which name is now considered a synonym of *marianae*. They are decidedly darker than the two birds taken in March, and one of them has a gray tail. No doubt they represent the breeding race of this region. The last word is yet to be said on the subspecific division of the Marsh Wrens of this genus, but our material is inadequate for a full discussion of the problem.

Brown Creeper. *Certhia familiaris americana.* A winter resident, observed but three times, on November 29, January 7, and March 4.

Southern White-breasted Nuthatch. *Sitta carolinensis carolinensis.* Resident, but far from being common. Five specimens secured are really very little different from northern birds.

Brown-headed Nuthatch. *Sitta pusilla.* A common and resident species, characteristic of the pine barrens. A set of five eggs was taken on March 2 from a nest built in a rotten post in Alaqua Bayou, some distance from the shore—a rather unusual site.

Tufted Titmouse. *Baeolophus bicolor.* A common resident. Specimens taken after the middle of February were beginning to get soiled below.

Carolina Chickadee. *Penthestes carolinensis carolinensis.* Like the last a common resident, and a good series of specimens secured.

GOLDEN-CROWNED KINGLET. *Regulus satrapa satrapa.* A moderately common winter resident, noted from November 17 to February 18.

RUBY-CROWNED KINGLET. *Regulus calendula calendula.* This species is likewise a winter resident, but is much more numerous, and appears to remain later in the spring, the last date of record being April 23.

BLUE-GRAY GNATCATCHER. *Polioptila caerulea caerulea.* One was shot on November 27, but no more until February 6, and a number through the rest of February and in March, but they did not really become common until the end of the latter month, and it is evident that the bulk of the species passes farther south to spend the winter.

WOOD THRUSH. *Hylocichla mustelina.* The occasionaal wintering of this species here is attested by the seeing of two individuals, on December 25 and January 13, the latter of which was secured. It is not known to winter in peninsular Florida, or in fact anywhere in the United States beyond eastern Texas, so that the present record is of considerable interest, being the farthest north known. No more were noted until April 18, and none after April 30, although it probably breeds here, at least in small numbers, since eggs have been found as early as this in the region immediately to the northward.

WILSON'S THRUSH. *Hylocichla fuscescens fuscescens.* Common as a spring migrant, from May 8 to the close of our work.

HERMIT THRUSH. *Hylocichla guttata faxoni.* Rather common throughout the winter, from November 18 onward. Most of them had gone by April 1, but a single straggler was taken as late as April 28, and another was seen May 7.

ROBIN. *Turdus migratorius migratorius.*

SOUTHERN ROBIN. *Turdus migratorius achrusterus.* Both races of the Robin appear to be represented in the small series of specimens secured, the most of which, however, are more or less intermediate, in their measurements at least. Robins appeared in large numbers on December 6, and remained common until March 13.

BLUEBIRD. *Sialia sialis sialis.* A common resident species, but more numerous in winter. A nest with one egg deposited was found April 4, and a set of five was taken on April 23.

SHELTER ISLAND HEIGHTS, N. Y., AND
CARNEGIE MUSEUM, PITTSBURGH, PA.

THE WILSON BULLETIN

Published at Sioux City, Iowa, by the Wilson Ornithological Club, with the co-operation of the following societies, viz.:

The Nebraska Ornithologists' Union.
The Iowa Ornithologists' Union.
The Kentucky Ornithological Society.
The Tennessee Ornithological Society.

The subscription price in the United States is $1.50 a year, and 50 cents a number; in all other countries of the International Postal Union the price is $2.00 a year, and 60 cents a number. Subscriptions and orders for single copies should be addressed to the Secretary, Prof. Howard K. Gloyd, Ottawa, Kansas, U. S. A.

EDITORIAL

The Chicago meeting was held as scheduled on November 26-27, at the Chicago Academy of Sciences. The figures are not at hand but there can be little doubt that the attendance exceeded that of any previous meeting. The program was carried out almost precisely as previously announced. The mornings and afternoons of Friday and Saturday were devoted to the regular program of papers. On Friday evening an open public meeting was held in Fullerton Hall, of the Art Institute, with Dr. Lynds Jones presiding. Mr. S. Prentiss Baldwin at this time presented the motion pictures showing the life history of the House Wren. The banquet was held on Saturday evening at the Parkway Hotel. Dr. W. D. Richardson, acting as Toastmaster, called upon a number who were present, including Mr. Ruthven Deane, the recognized dean of ornithologists in Chicago. On Sunday one party was conducted to the Bird Sanctuary in Lincoln Park, while another group assembled at the Field Museum of Natural History. There are some very fine bird groups here, but, apparently, ornithology has not been featured as much as have some other departments of the Museum. The Museum is housed in a magnificent building. The guards told us that afternoon that more than five thousand people had entered the building since it was opened in the morning. Presumably most of these people were still present, since a cafeteria is operated for the convenience of visitors; and yet the halls and corridors were not crowded with this great number of people.

At the business meeting it was voted to incorporate the Club immediately, in order to be prepared to begin active solicitation of the endowment fund. The plan of the Endowment Committee was adopted practically as presented, which provides for the selection of a corporate trustee, who shall hold and invest the principal of the fund, turning over to the officers of the Club at intervals the accrued interest. It is also provided that a committee of the Club shall act in advisory, not mandatory, capacity in the investment of the funds. There may be a few minor changes necessary before the document is signed, but in its fundamental aspects the matter has been arranged, now awaiting only the action of the officers in carrying out the details. With the situation thus developed there should be no hesitancy on the part of those so inclined in providing for bequests, or in making immediate donations. Dr. Lynds Jones was elected as President, and Prof. J. W. Stack was made Treasurer for the ensuing year. The meeting was a complete success from every angle, and our Chicago

constituency is deserving of our cordial thanks and congratulations. The proceedings will be regularly published in the March number of the WILSON BULLETIN.

The Chicago meeting was strongly flavored with bird banding, as was also the Kansas City meeting. This has been a matter of some concern to some of those officials who are responsible for things. It has been the desire to keep the program in what might be called a balanced condition, not too heavy with any particular phase of ornithology. And this is a very laudable desire. But we believe that one thing was brought out on this subject at the recent meeting, if it had not been noted before. This one conclusion is that bird banding is not an end or a goal in itself, but is simply a novel method which has been added to the armamentarium of the ornithologist for the solution of his general problems. The bird banders themselves have been the first to realize this.

The striking fact has been that while our recent meeting has been notable for the number of banding papers on the program, yet, and this is the striking fact, there has been no monotony whatever in their presentations. There has been as much variety in the papers presented as before the banding method occupied our attention. One bander has investigated plumage changes, another has confined his attention to the study of body temperatures; another has learned interesting facts concerning mating and domestic relations among birds; still others are interested in the many phases of the migration problem; and thus the list of problems attacked by the bird bander might be greatly extended.

But, let it be observed, these problems are the same ones which the ornithologist has faced from the beginning. We therefore seem to be confronted with the fact that the bird banders are not a class *sui generis*, but are ornithologists with a new method of attacking their problems. This discovery clears the atmosphere. This being the case why should the bird banders have their "day," while others hold their distinctly labeled meeting? After the facts have been established it will matter little whether they were discovered by means of the shotgun, or by means of the trap.

The bird bander realizes the wealth of opportunity which lies within his reach, and is enthusiastic about it. He wishes for the work to proceed faster, and he longs for more helpers. He is anxious to present his case to the skeptics and the cynics, in order that he may win converts to his methods. He has the confidence and enthusiasm of achievement to hold him at his task. To the hard-boiled skeptic there is something suspicious or mysterious about the bird banders' enthusiasm. The hum drum routine of the staid laboratory worker does not furnish much excitement or enthusiasm until he stumbles upon some important discovery; then, usually, his human nature is expressed. A scientific fact is never discounted by intelligent men because it was discovered by an enthusiastic worker. Men of action are often emotional. Cynics usually have their emotions well submerged. Men of intelligence can distinguish fact from fancy, and are not blinded or misled by the incidental personal element.

We are not sure how much professional training should be demanded of the bird bander. Certainly he should have the training necessary for the work at hand. But how much is that? How much training is necessary for the banding of birds? We would say that he should have enough training to insure the

accurate identification of the birds handled. If he is to interpret results that may be a different matter; but every bander is not called upon to interpret results.

We believe, therefore, that bird banding is an established method of bird study; and that it will assist tremendously in the solution of those problems where the identification of the individual bird is required. The bird bander is an ornithologist, generically speaking; the ornithologist is a potential bird bander, and should at least be sympathetic with the banding method, and interested in the scientific results obtained by that method. More progress will be made if these groups commingle at our meetings and on our programs. The sequestration of the bird banders on the programs will not mean progress.

The dues for 1927 should be sent to the newly elected Treasurer, Prof. J. W. Stack, Michigan Agricultural College, East Lansing, Michigan.

GENERAL NOTES

Conducted by M. H. Swenk

The Black-bellied Plover in Oklahoma.—On August 18, 1925, an American Black-bellied Plover (*Squatarola squatarola cynosurae*) was identified by me at Gate, in northwestern Oklahoma. This species has not previously been recorded from this State. The plover was on a shallow fresh-water pond and was sufficiently tame to afford a splendid opportunity for observation and identification. The distinguishing white base of the upper tail coverts was plainly visible. It was under observation for about half an hour and permitted the observer to approach within twenty-five or thirty feet. Then it would fly up, and, giving its characteristic whistle, circle above the water and again settle down and resume its business of picking up insects on the pond.—Walter E. Lewis, *Gate, Okla.*

Aerial Maneuvers of Migrating White Pelicans.—On September 21, 1926, as I was coming up the street at 4 P. M., I noted several people looking up at the skies, and, on searching for the reason, I discovered a vast concourse of what I took to be White Pelicans (*Pelecanus erythrorhynchos*). I did not have my binoculars. The sheriff was standing near me and was looking at them. I asked him, "How many are there?" After scanning the milling mass for a few seconds, he said, "A thousand." They were too numerous to get anywhere near to one mass, but by gathering in layers there would be, say, three hundred swirling about in one crowd; a hundred feet below them another such crowd, and another hundred feet further down, another huge mass. They would be milling around in different directions. Maybe the upper mass would all wheel to the east; just as the middle mass would swing to the north, and the lower be moving to the west, marching and countermarching, for fifteen minutes. Then they seemed to break into separate flocks, heading off to the south in a V-shaped army. —Leroy Titus Weeks, *Tabor, Iowa.*

The Pileated Woodpecker in Tuscarawas County, Ohio.—Another rare nesting bird in Ohio, the Pileated Woodpecker (*Phloeotomus pileatus abieticola*), seems to be gaining in numbers in this county. A pair nested near our home in 1920. This nest was about fifty feet up in a green ash tree that stood about

200 feet from the bank of Stillwater Creek. A pair of Fox Squirrels preempted the tree for a home the following winter, and the woodpeckers have not occupied it since.

We have seen them on numerous occasions every year since 1920, but were not able to locate a nest until 1923. On May 30, about a mile down the valley, we found a pair nesting in a large dead beech stub, about forty feet up, which seemed to have been in use for several years. We visited the nest again on June 15th to try for some photographs, but on close inspection the tree seemed too dangerous to climb. We saw a pair at the tree the evening of January 4, 1924, but did not visit the tree in 1924 and do not know whether they nested there again that year or not.—CHARLES R. WALLACE., *Delaware, Ohio.*

An Unusual Nesting Site of the Prothonotary Warbler.—On July 13, 1926, while I was at the Boy Scout Reservation near Indianapolis, Marion County, I was informed that a Prothonotary Warbler (*Protonotaria citrea*) was nesting in a building used as a crafts workshop. Investigation revealed that three of the four fledglings had matured and flown, and the fourth was out of the nest on a ledge, calling loudly. Though well feathered it showed little yellow, resembling closely a phoebe fledgling. This baby had been reared in a nest of mosses, placed on the inside of the building on a two by four horizontal brace, four feet above the floor, in such a manner that the two by four itself made the bottom for an inch. Access to the building had been obtained through an open window eight feet west of the nest. This building was used by more than fifteen boys during the daytime in the study of blacksmithing, motor building, painting, and leather working, most of the time during the incubation and feeding period of the birds. The building was about fifty feet from water. The remaining fledgling was banded and tied under an improvised trap made of a window screen. With the help of the scouts the male adult bird was trapped and banded. Dr. Amos W. Butler considers this an unusual nesting bird record.—SAMUEL ELLIOTT PERKINS, III, *Indianapolis, Ind.*

Two Comments on the Nidification of the Acadian Flycatcher.—May 9, 1926. In the article "Acadians I Have Found" in the March, 1926, WILSON BULLETIN, the author has either made an error in identification or else the nidification of the Alder Flycatcher has been adopted, in this instance, by the Acadian Flycatcher. The Alder Flycatcher builds a fairly compact, high-walled nest, three to seven feet up in willow or alder crotches, along marshy pond margins or in sloughs of the old lake-bed type. The Acadian Flycatcher builds a loose, shallow, semi-pensile nest in beeches, witch-hazel, maples, horn-beam, etc., ten to twenty-five feet up in woods. They are birds of the forest shade. The number of eggs is two or three.—EDW. R. FORD, *Grand Rapids, Mich.*

October 2, 1926. I have just been reading the article by S. E. Perkins III, on pages 43-44 of the WILSON BULLETIN for March, 1926, and am moved to say that the description of the nest attributed to an Acadian Flycatcher seems to indicate that the birds were Alder Flycatchers, and not Acadians. The latter species, so far as I know, always nests in moist woodland, building a shallow nest *without lining* in the forks of a horizontal limb. The nest found by Mr. Perkins apparently answers the description of the ordinary nest of the Alder Flycatcher. It is to be hoped that the birds may return next year and thus afford an opportunity for further study. The wing formula given agrees with

that of the Alder Flycatcher rather better than with the Acadian.—ARTHUR H. HOWELL, *Washington, D. C.*

An Open Nest of the Prothonotary Warbler in Ohio.—Early in the spring of 1926, I had an argument with an ornithologist who claimed that the Protronotary Warbler did not nest in Ottawa County, Ohio. I claimed that I had heard and seen the bird while on a fishing trip the year before, and promised to make it my business to find its nest. During the second half of June I observed a pair of Prothonotaries foraging along Sugar Creek, near Elmore, and carrying insects into a small thicket of shrubbery and weeds, as though feeding young. A group of Boy Scout bird students watched these birds on various days and tried hard to locate the nest without frightening the parent birds. I had become acquainted with this warbler and his nesting habits in Shelby County, Ohio, where the nest was made in a cleft in a decaying post, at the edge of Loramie Reservoir. Therefore we looked for a nest in a cavity, and were foiled, as we could find neither a cavity nor a tree or post big enough to contain a cavity, in the vicinity in which the birds appeared to be feeding their young.

The matter was reported to Prof. Mosely of Bowling Green, Ohio, who came to observe the birds on June 25th. He verified my identification, and together we watched the birds for some time. At length we found them feeding fledglings—not in a nest located in a cavity, but in an open nest placed in the crotch of a young ash tree.

Prof. Lynds Jones, to whom the observation was reported, and who is now in possession of the nest, observes: "Audubon stated that the Prothonotary Warbler built its nest in a bush, but it is now agreed that he was either mistaken or, not having seen a nest, assumed that it nested as the other warblers do." The undersigned is merely reporting an observation. Whether the pair of warblers under observation had built, found, or stolen this nest, we do not know, nor do we presume to offer a solution of the problem. But a pair of Prothonotary Warblers was observed feeding young birds in an open nest placed in the crotch of a sapling.—H. S. v. RAGUE, *Elmore, Ohio.*

An Unusual Flight of Cormorants.—On seeing in the Chicago Tribune for April 24, 1926, that a tremendous flight of loons had passed over La Crosse, Wisconsin, going up the Mississippi River during a gale and rain, I wrote to the postmaster at La Crosse, who turned my inquiry over to Mr. Mark Byers, Editor of the La Crosse Tribune, who writes me as follows:

"The flight first appeared over the river bottoms south of La Crosse about 3 P. M. It continued for two and one-half hours, more or less intermittently, although there were always from a dozen to hundreds of large flocks in the air. The birds were flying more or less directly north up the main channel of the Mississippi, and a great many of them circled and alighted in Target Lake, an arm of the river about three miles below the city. Others kept on going. They were evidently weary, frequently flying low to the water although no heavy north wind was blowing, such as usually forces wildfowl to fly low.

"The flight was so large that at times it was impossible to see the sunset sky through the mass. At other times they would be strung out in long irregular lines and groups —'like blackbirds'—says one witness. The number of birds is variously estimated, as from 100,000 to 1,000,000 birds. No sign of the birds was seen the next day."

The birds were identified as the Double-crested Cormorant (*Phalacrocorax auritus auritus*) by Prof. John P. Bird, of La Crosse, Wisconsin. I quote from his letter:

"The flight in question was moving northward and consisted of very many thousands, reaching for miles along the valley. I have never seen so large a flight of cormorants as this seems to have been."

At this date, September 7, I have seen no mention of this flight in our bird journals, therefore this account may be of interest.—FRANK GRASSET, *Glencoe, Ill.*

The Fishing Habit of the Bronzed Grackle.—The only reference that I remember having seen concerning the fact that grackles (*Quiscalus quiscula* subspp.) may be fishermen is the statement that fish were found in the stomachs of birds, made in the bulletin on food of the grackles. Yet my observations during the present season indicate that grackles living near the water may depend upon fish for their food to a considerable extent.

One morning while on a field trip in company with Dr. C. E. Ehinger, we were attracted to what we supposed to be a bathing party of Bronzed Grackles (*Q. q. aeneus*). On closer watch we found that they were fishing for minnows below the dam. The Mississippi River Power dam is approximately a mile in length, and at normal level the water is thirty-six feet higher above the dam than below. At points where the gates are open the pressure is sufficient to make a tremendous disturbance from the falling water, the spray rising as high as the dam itself and the water below being rough enough to capsize a good-sized boat. Where the gates are closed there is a constant dripping of water over the sloping aprons below the gates. Some gates which do not fit as tight as others permit a considerable amount of water to pass through. Where the birds were alighting on the cement the water was running in a stream about to their knees. Their long tails seemed to bother the birds by getting in the water and often throwing them off their balance.

We were able to approach within fifty to one hundred feet of the birds, and through our glasses to observe them closely. They would alight in the shallow water and watch until they were able to catch a passing minnow. Then they would fly to a nearby rock, or to the top of the dam, and hammer the little fish to death, after which they would fly away, probably to their nests. We did not see them feeding the fish to the young but from the fact that nearly all flew away with fish in their beaks we supposed that to be their object.

Having once noticed the fishing proclivities of these birds we went several different times to observe them, and took other persons to see them. Whenever we went we found the birds coming and going in considerable numbers, and seldom found any delay necessary in order to see them catching the minnows. It soon became evident that the Bronzed Grackle, in this neighborhood, at least, depends to a considerable extent upon fish for food. We are now wondering whether this trait has been generally overlooked, or whether we had not noticed the references to it in our literature.—FRANK C. PELLET, *Hamilton, Ill.*

The Mockingbird in Mahoning County, Ohio.—Very few definite records of the presence of the Mockingbird in Mahoning County, Ohio, have been made. Our home in Canfield Township has been favored twice. In the spring of 1923 a Mockingbird settled in our driveway, apparently looking for food. Again, a

Mockingbird, which may have been the one observed in the spring, came to our yard on November 23, 1923, attracted by the fruits of the shrubbery—the Sweet Viburnum (*Viburnum lentago*) especially. The bird was seen eating these berries often, and on several occasions the regurgitation of the seeds was observed.

We tied some suet to a branch of one of the Viburnums, and when sure the Mockingbird was feeding on it, we substituted a four mesh woven wire basket of suet, such as we had near the house for other birds. A week or so later, the Mockingbird came to the basket near the house, and soon took such complete possession of it that we had to put up some baskets at a distance for the other birds, which she was driving away relentlessly. She would perch near the basket and pitch at every bird approaching. Having observed her habit of dropping to the ground below the basket to pick up the bits of suet which fell there, Mr. George L. Fordyce placed a woven wire drop trap on this spot, caught the Mockingbird on April 22, 1924, and banded her. The incident did not seem to disturb the bird in the least, and she remained all winter.

The latest we saw the Mockingbird in the spring of 1924 was on April 26. She was next seen August 20, perched on a beanpole in the garden. Her familiarity should have assured us that she was the bird which left us in the spring, but the sight of the band on the leg was a satisfaction. She remained with us continuously until the following summer.

In the spring of 1925, thinking the mocker might go away again, as she did the previous year, we looked for her daily, in order to make a last record of her presence. Sometimes we would hunt all over the yard for her, for her visits to the suet basket were not at all regular when food became abundant. About the middle of April we heard her give a rather harsh and prolonged scolding note. Therefore the only note heard was a sharp smack. On May 1 we heard her in the orchard giving the scolding note repeatedly while chasing a Robin. We had become accustomed to looking for her in the orchard, but this was the first observation of her chasing another bird, except from the suet basket. Still our suspicions were not aroused until May 3, after seeing her chase a Robin for the third successive day. We then made inspection of the bordering Norway spruces, in one of which, about three feet from the ground, we found the Mockingbird's partly built nest. In an adjoining spruce was a Robin's nest. Here, then, was the cause of the trouble in the orchard.

The nest was completed in a few days, and the first egg was laid on May 7. When the fourth egg was laid, on May 10, the Mockingbird began her experiment of incubating infertile eggs. She abandoned this nest on June 1. On June 8, we found a new nest, at a height of eight feet, in a pear tree about fifty feet from the first nest. Four eggs were laid and incubation began June 12. One egg was punctured June 21, apparently the work of a House Wren. This second nest was deserted on July 1.

The Mockingbird was not seen between July 3 and September 14. We wonder if she went away to try once more to raise a fatherless family—and where or how far she went. Returning on the latter date, she remained, eating berries and suet. Undoubtedly she had settled down to spend another winter with us. The last record we made of her welcome appearance in our yard was on October 15, 1925.

On the morning of October 19 we found on our barn floor, immediately below a Screech Owl's favorite perch, feathers which looked like those of our Mocking-

bird. With them were numerous blue feathers. We collected them, and Mr. Fordyce sent them to Dr. J. T. Nichols, of the American Museum of Natural History, who returned them in two envelopes; one marked "Bluebird" and the other "Mockingbird." He wrote: "Dr. Dwight has compared these feathers with me and agrees that the identification is definite for both species."

We recall that the Mockingbird and some migrating Bluebirds were accustomed to roost in the Virginia Creeper growing on the barn. Just above this vine is an open hay-mow where the Screech Owl was in the habit of perching before starting out for the night. It is quite probable that it was from this point that he observed and caught his prey.—Willis H. Warner, *Canfield, Ohio.*

Some Random Bird Observations from Texas.—Mr. J. A. McLaughlin's use of the word "pour" in connection with the going to roost of Chimney Swifts (Wilson Bulletin, XXXVIII, p. 36) is a good one. I have watched them do the same in far-western Texas, only it was into the vertical entrance of a deep cave. As the Swifts poured into the seventy-five foot, or so, opening of one cave, at twilight, the bats, which were their fellow residents of the great subterranean chamber, streamed silently up out of the dark hole. Between dawn and sunrise it was the Swifts which streamed forth, and the bats which poured themselves back into Nature's jar of the genii. Of course, we threw rocks down into the underground stream that we could not see, and were rewarded by hearing an almost deafening chorus of squeaks and twitterings, and rushing wings, as parts of the cave's population whirred upward in a cloud of worried little bodies. I have some very fair photographs of this and other big caves, and intend eventually to write more about them and their queerly assorted feathered and furred populations, not to mention the snakes that having, presumably, somehow gotten in cannot get out and so have adapted themselves to their circumstances and bred to an extent that makes exploration hazardous for any but the most constantly alert.

Mr. Frank L. Burns speaks of Cowbirds riding the gale (Wilson Bulletin, XXXVIII, p. 39). We of the coast know how the ominous figure of the Man-o'-war bird is borne inland from his lonely haunts in the outer reefs and barrier islands just ahead of a hurricane. Fishers and trappers of the coastal plains, who live with and by the wild things of the land-locked bays, the bayous, reefs, barrier islands and marshes, have theories of their own about migration. That birds they know to be given only to short flights, before tiring, can come and go across the waste of salt water between Texas and Mexico requires an explanation. One explanation that they have figured out is that the big birds involuntarily give the smaller ones a lift. I, for one, would admit the possibility of this, were it not altogether unnecessary. For more than thirty years I have seen little birds hop on the backs of big ones. Where the selected steed is sitting or standing, a threatening backward flirt of its head is sufficient to repel the small bird. But when it is a-wing, it is absolutely helpless. To rid itself of its unwelcome guest it must stop and alight, before it can reach around after the annoyer. All of which takes time enough for the little fellow to be gone before he can be punished. Chickadees, nuthatches, titmice and warblers are all prime offenders this way. I have had Mockingbirds, Catbirds, Robins, thrashers and thrushes and other nervous species reduced to hysteria by the particularly sinful eight little chickadees that all came from the same nest, between a spruce tree's trunk and a loosened section of its bark.

But here enters the second possibility; and one to which I unhesitatingly and unreservedly subscribe. As I have before stated, let him who will jeer. On the fitful little southeasterly winds that precede hurricanes strange things, besides the great Frigate Bird, come riding inland from the sand and mud barrens, and the offshore islands, of the farthest and loniest reaches of the broken land-fingers extending out into the Gulf of Mexico. Rarely, a Flamingo or two; often wonderful Tropic Birds; sometimes creatures of the gull, tern and allied tribes, that never come inshore unless driven; and occasionally land birds from distant, and far more southerly peninsulas, or from shell-bank and mud-flat islets, too often awash from human visitation otherwise than by accident. Note that these come *with* the precursors of imminent storms, but not *on* them. The source of our visitants' freightage is the same invisible force that covers the sky, high, high up, with ripples of tiny white cloud, like interminable flocks of sheep, all scudding madly northward and westward, though down at earth level the breezes sigh gustily, from this way and that; then die out as sharply as they arose. On late summer and stilly autumnal nights, when the migrating birds fly so low they can be identified by their call notes, there may not be enough air stirring to set the loose-hung leaves of our willows idly to vibrating. That is, what we *ground-dwellers* can percieve. But if there are any telltale little cotton-batting clouds to drift across the face of the moon, these fleecy small argosies will be seen to have southerly, southeasterly or southwesterly directions, especially straight southerly.

I will not here go into the autumnal behavior of my own Purple Martins, nor that of my Nighthawks and other high-flying, wing-feeding birds, nor of the wild birds I have watched, for nearly twenty-five successive seasons, down in this region of far-flung, open vistas where the watching is so very good, other than to say that, by the way all these fought their way up or down, through opposing air currents, unseen or otherwise non-perceptible except by the way the birds tacked and veered or were turned end for end when the currents were strong and themselves persistent, I am satisfied that they who hold that the birds simply mount until they strike an air current strong enough to support them are right. Just *how determining* a factor this is in migration as a whole, I do not know. That is, whether or not birds, restless and uneasy, because of a growing food scarcity, fly up and are caught by aerial streams, too powerful for them to do otherwise than let themselves be passively carried, north or south, as the case may be, and for hundreds of miles, till the intangible river sinks to low enough strata for them to alight, or its force and volume lessens with the same result; or, whether their rising, with vague ideas of changing their ranges for more abundantly supplied ones, brings them into contact with the warning chill of high currents flowing down from the north, long before such will be known below, and they thus flee, less actually *before* than *with* the first breath of these. That the question of food is the *first* motivating factor in the equation hardly admits of argument. Everyone knows these preliminaries to migration: That tender young insects and worms have grown mature and tough, often armor-encased, or else have walled themselves into cocoons or strong, ill-tasting shells of one kind and another. Also springtime's and early summer's fruits are wholly or nearly gone and autumnal, or later, ones are still unripe, when the first ripples of southward migration become apparent. All this independent of physiological conditions, or

of the tendency of the season's nestlings to follow anywhere and at any time the older bird's lead.

What seems to me pretty absolute proof that migration is far from being merely instinctive, is that of all the hundreds of migratory birds I have raised, I have never had one, unless where free to blindly stray after transients of its kind to show the slightest interest in the passing through of its relatives. That is, further than to fight at these, or to talk to them. My free Purple Martins would go off with passing flocks of Martins all right—Oonah often straggled with such to their roosting place for the night, so far from home that she might not get back until well after the next day's sunrise, but the others always came home in time to shuffle into their own sleeping baskets. And Oonah so invariably set up a mournful yelping to be taken in, of an early morning after one of her nights out, that had she ever failed to do so I would have known her to have met with an accident. Not that she always came directly to her own house. Uncounted times some neighborhood child has come to one of our doors and yelled: "Mrs. Reid, Mrs. Reid, Oonah is over on our street!", or "down at the car shed," or "out in the tankfield," or "up on the rice mill." Men at the rice mill would telephone me that Oonah was telling the world, from the top of the elevator, or one of the huge spider-legged water tanks, how wearied and hungry she was, and how wanting to fly down to me, or to be tolled the rest of the way home. Everybody knew her, and she would answer to her name, no matter who called. But she came down into my hands alone, and accepted food from no one else, which was the real cause of her death. Purple Martins, common as they are, and as well known, to a casual extent, are remarkable birds, in more ways than on the score of a high degree of intelligence.

Birds, taken after having migrated, are tremendously concerned over the flights of their leaving kind, and to a certain extent, about the reappearance of the homing ones stopping over here on their way up from the South. Hand-raised ones, which never made the journey, are worse than indifferent to the matter. There are other phases of the subject, likewise suggested by the ways of hand-raised birds. But what I have already said may be enough to insure my being turned out of the church!

The common, pretty, little American-beauty-pink, greyish-brownish, streakedy-stripedy House Finch of the West will build anywhere, and with any of the same materials, as the English Sparrow. Aside from their pleasing appearance, and equally pleasing little warble, these hardy little fellows, if introduced into a locality in sufficient numbers, could hold their own against any species of approximately their own size or bigger. I have carried them around, from place to place, with me, and have had them show no ill effects from it, as well as quickly adapting themselves to an entirely new environment. And I have had them employ, in self defense, those tactics which alone make the English Sparrow so formidable, "ganging up" on a foe. Successfully, too. Whipping off such fighters as English Sparrows, Mockingbirds, thrushes, jays, etc.

Has an attempt ever been made to supplant our greatest imported pest by first cleaning them out as thoroughly as possible, and then releasing numbers of tame House Finches in their places? Of course the automobile, by taking away the horse's and the mule's occupations, and so making livery stables practically extinct, and more self-assertive civic consciences reducing the numbers and obviousness of manure and other refuse piles, have already dealt the nuisance what

will eventually prove to be its death blow insofar as *city* life is concerned. But it is possible he may utilize his amazing adaptiveness to where he can successfully compete for a living with the birds of the woods and the fields, though I do not believe this, otherwise than in greatly decreased numbers, because the very boldness which so fits him for town life will militate against him, where he must gain so many, to him, unaccustomed enemies, while at the same time he will have been robbed of most of his safe roosting and nesting sites. In any case, the birds previously established, and ready to prove that possession is nine points of the law, and just as able as himself at gang offensive and defensive, will have little to fear from him. And right now is the time to begin getting the House Finches together, for hand-raising, teaching them that humankind are their friends, and generally preparing them for being freed, as soon as they are able to care for themselves, so that they may make themselves at home long before winter sets in. Of course they should also be provided, for at least a season or two, with winter shelter, food and water. But their demands in these lines could be met at little expense, and with little trouble, since here again they show points of similarity to the English Sparrow, stowing themselves warmly away, sparrow-wise, for first preference around street or outdoor building lighting fixtures, and against chimneys, or under house eaves, and so forth, as well as making acceptable grist of practically all that comes to their little mills.—Bessie M. Reid, *Port Arthur, Texas.*

BIRD BANDING NEWS

Conducted by W. I. Lyon

BANDING GULLS AND TERNS IN LAKE MICHIGAN; 1924 AND 1925

BY FREDERICK C. LINCOLN

In the Wilson Bulletin for March, 1924 (pp. 38-41), I presented under a similar title, an account of the banding work done at the Beaver Islands, in northern Lake Michigan, during the summers of 1922 and 1923, in co-operation with W. S. McCrea, of Chicago, who, with the help of Mrs. McCrea, carried on the initial activities there in 1922. Because of his continued interest in this work it was my privilege to continue banding operations at that point during the summers of 1924 and 1925.

Accompanied by Mrs. Lincoln, I arrived again at St. James on July 18, 1924, following two weeks work for the Bureau of Lighthouses at the Charity Islands in Saginaw Bay, Lake Huron, and at the lighthouse reservations in the Straits of Mackinac. We were cordially greeted by the McCreas and, taking advantage of calm weather, we made a trip that same afternoon to Mire Island. In 1923 this islet supported a colony of about 100 Herring Gulls, which in 1924 had grown to about 500. From subsequent observations a certain yearly fluctuation in the size of the colonies was evidently to be expected, for which I have no reason to offer, other than the idiosyncrasies of the birds, which cause them to abandon partially one island in favor of another that is seemingly not so well suited for their needs. This lack of consistency is reflected also in their migratory movements.

Despite the large number of adults present, only sixty-nine young were banded, the season apparently being early, since many young noted were already

flying. Stony Reef, a long narrow islet off Garden Island, we visited on the return trip and there we found a breeding colony of about 300 pairs of Common Terns. A few eggs had hatched and many chicks were found dead, probably from the cold and rain of the preceeding days.

Two days later we cruised east to Hat Island and there too found an increase in the number of gulls. As at Mire Island, many young were then on the wing. We banded 181 birds and then crossed over to Little Hat Island to examine the colony of Caspian Terns, which likewise was in a prosperous condition. Many eggs were still unhatched but we easily banded 135 young. Returning to this point on the next with a small net, we erected a small corral with a V-shaped

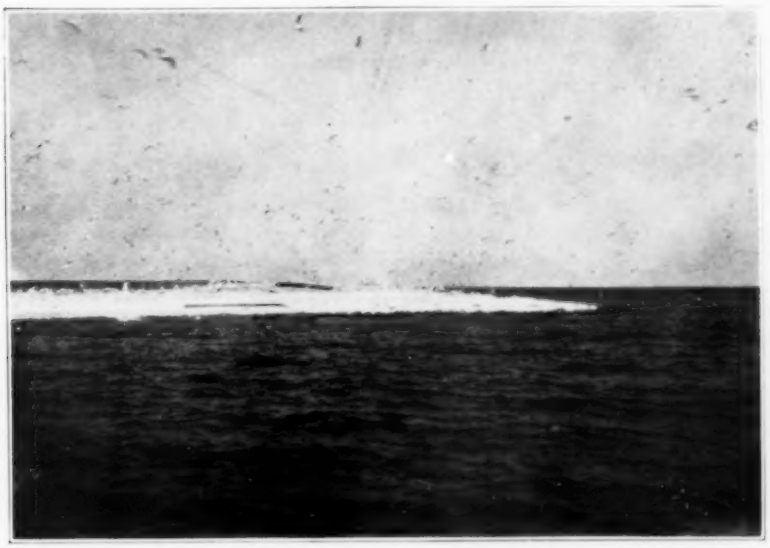

FIGURE 1. The North End of Little Hat Island, with its Colony of Caspian Terns. Photograph from U. S. Biological Survey.

entrance, into which the young were carefully driven. We banded 365 of them and exhausted our supply of No. 6 bands.

Adverse weather kept us more or less idle for the next two or three days, but on the 25th we succeeded in reaching Gull Island, the day being the anniversary of my trip there in 1923 when 259 young gulls were banded. Naturally, a high score was anticipated, but we were disappointed as almost all the young were on the wing, and the careful searches of the entire party netted only thirty young, which were banded. Leaving this island we went to Trout and Whisky Islands, neither of which had previously supported many breeding gulls. On Whisky Island, however, we found a small colony and were able to add sixteen birds to the day's total. On the following day a short run to Stony Reef resulted in the banding of 101 young Common Terns and a Spotted Sandpiper.

The mortality among the young of colonial birds is usually more or less heavy, so whenever possible I endeavor to make "follow-up" trips to ascertain the percentage of banded young that died without reaching maturity. Work of this

nature at Litle Hat Island on July 30 resulted in finding thirty-four dead young with bands, seven per cent of the number used. As this islet is devoid of vegetation, I am sure that we found all that did not survive, with the possible exception of such young as swam long distances from the island and were unable to return. Young gulls quickly become water-logged, but it has been my observation that the plumage of young terns is better able to withstand a wetting. At Hat Island only four dead banded gulls were found.

In 1925 we started the work earlier and arrived at St. James on June 20. Upon boarding the steamer at Charlevoix we were delighted to find as fellow passengers, Mr. and Mrs. Walter E. Hastings, of South Lyon, Mich., and Mr. and Mrs. Norman A. Wood, of Ann Arbor, Mich., and when we arrived at St. James we met Dr. and Mrs. Frank N. Wilson, also of Ann Arbor. Doctor Wilson and Mr. Hastings were engaged primarily in photography, although Mr. Hastings afterward continued his excellent work at Lone Tree Island in Saginaw Bay, banding more than 1,400 Common Terns.

Our early arrival in 1925 was due primarily to my desire to test one or two methods for capturing adult gulls, and with this in mind I had added to my outfit two powerful focusing flashlights. With the assistance of one of the fishermen, we rigged up a large dip net on an 8-foot pole. The plan was to proceed to a colony of breeding gulls and camp and then by working at night to approach the incubating birds, trusting in the glare of the flashlight to prevent them from flushing until we were close enough to use the net. Unfortunately, we were unable to decide upon the effectiveness of this scheme because of an exceptionally early season.

Mrs. Lincoln and I were landed with a light outfit on Mire Island in the evening of June 27, at about 8 o'clock, and by 9 o'clock our camp was in shape. As this was purely an experiment, arrangements were made for the boatmen to return for us the following morning. Our camp consisted only of a lean-to placed back against the hedge of white cedars that cover one end of the island, and although it was a raw, chilly night we felt that any kind of a light would injure our plans, so the comfort of a fire was lacking. It was after midnight when the moon set and it became dark enough for our purpose, but while waiting our attention was occupied in noting the behavior of the gulls at night. We were surprised to observe how many were in the air as revealed by their calls. Starting from our base with the lights, net, and bands, we made the complete circuit of the island, even to crossing it at two different places, without flushing a single adult gull. The young were everywhere but no nest was found containing fertile egs; in fact, very few nests were found with either eggs or young, as the chicks seem to leave the nest shortly after they are hatched. We turned the lights out over the water and found the adults resting about fifty yards offshore. Whether they were aware of our presence on the island we were unable to determine but I am inclined to believe that this is a rgular procedure after the eggs are hatched.

We returned to camp about 2:00 A. M., built a small fire, and at 2:30 had what we called "first breakfast." It began to get light about this time, and by 3:00 o'clock we could distinguish objects well enough to start to work. By 6:00 A. M. we had banded 100 young and we had covered only about half the island. A high wind came up so that it was only after a thorough wetting and much maneuvering that we were able to get aboard the power-boat that came for us at

FIGURE 2. Young Caspian Terns in the Corral, ready for Banding. Photograph from U. S. Biological Survey.

FIGURE 3. Experimental Trap for Herring Gulls, with a few Captured Birds. Photograph from U. S. Biological Survey.

6:30. The flashlight scheme needs further tests, but I believe it will prove useful.

Profiting by the experience gained in 1924, I had added to my equipment a net, seventy-five feet long and three feet wide, to be used at the Caspian Tern colony on Little Hat Island. Work was carried on at that point on July 19, the net being set in a wide V with the converging sides terminating in a corral or pocket. The entire party then proceeded by boat to the opposite end of the island and four drivers landed, the two small boats following slowly down the shores abreast the drivers. The young terns scuttled ahead and soon the ground was literally alive with them, much like the movements of the swarms of fiddler crabs on the South Atlantic coast. More than 600 were secured in this one drive. I had three assistants to help band while two others remained inside the corral to prevent the birds from crowding. This precaution is very important as it is easy for a large number of birds to be smothered. The pocket or corral should always be as large as possible and *never* have any corners into which the birds can gather. The dust from the feather sheaths is apparently a factor which can cause injury to closely packed birds, and operations of this character should not be undertaken except when sufficient help is available. As fast as the young were banded they were released headed toward the nesting ground, toward which they made with all speed. Less than two hours were occupied with the banding.

A trap for adult gulls was built also about a mile from St. James. It was baited with offal from the fish dock and while partially successful, did not capture as many birds as was desired. Altogether 1,753 of these birds were banded during the season.

U. S. Biological Survey, Washington, D. C.

BANDING GULLS AND TERNS ON UPPER LAKE MICHIGAN

BY WM. I. LYON

In 1924, the Inland Bird Banding Association had secured volunteers for a number of good gull and tern colonies; but no one had volunteered to take Green Bay and Lake Michigan's northwest shore, so the writer and his son decided to work in this territory.

On arriving on the islands, July 25, we found the Herring Gulls all hatched and most of them already in the water; but by steady searching, we were able to band 383. H. C. Wilson was with us and banded a few more, bringing his total to 150, and making the total for the district 533 Herring Gulls banded. There was much high wind and very rough water, and it was so rough we could make little headway in ordinary boats. Some kind person suggested that we appeal to the Coast Guards for help; the Plum Island Guards responded quickly, and pleasantly, and took us to Gravelly Island, Michigan, where we banded our first Caspian Terns, getting 126. It was a new thrill and an eventful ride in the life boat.

We returned to our headquarters at Ephraim where we tried the church for Chimney Swifts, and were successful in banding eighty. The first bird out of the chimney was a "return," one that had gotten into a neighboring house and was banded by H. C. Wilson in 1923. Three weeks later, this same swift was caught at Sturgeon Bay, Wisconsin. The band was removed and send to Washington, D. C., and the bird released, we hope.

In 1925 we had hoped to be much earlier but were delayed until July 20. There had been a much earlier and warmer season, and we found the Herring Gulls all in the water. While sitting on the porch of the Plum Island Coast Guard Station in the evening of July 20, 1925, a Caspian Tern was observed hovering around the docks, watching for fish. He came to the same spot several times; then a Herring Gull came and alighted on the dock close by, which seemed to anger the tern very much, and he made several dives at the gull, forcing it to fly away. As soon as the gull was at a safe distance, the tern returned, hovered over his favorite fishing spot again, and immediately dived. At the instant the tern started down the gull started back and struck the water just a few feet from the spot where the tern had disappeared; and as the tern rose to the surface the gull seized the fish and wrested it away from the tern and flew about one hundred feet away and alighted on the water. As soon as the tern had recovered from the shock he made a wild dive after the gull and gave a loud cry as he almost struck the gull. This was repeated but the tern never actually touched the gull. In the meantime the gull had succeeded in swallowing the fish and flew away. The tern took one more dive, apparently got another fish, and he also flew away, but in the opposite direction. The gulls have been observed to rob the merganser ducks in the same manner.

On July 21, the Plum Island Coast Guards cheerfully responded and took Dr. Lewy, his son, and the writer to Gravelly Island, Michigan. As we approached the island, we could see with our glasses that the young Caspian Terns were assembled in a large flock on the higher part of the island. We landed as quietly as possible and set up a roll of poultry netting in a U-shaped corral. One man remained at each side of the opening and the rest went around very cautiously to the opposite side of the island, then started our drive. It worked perfectly except that the birds would stampeed like sheep and even after they got into the corral they would rush for one side and knock our netting over and each time many would escape. We started with about 300 young birds in the corral and banded about 100. Then, by searching them out of their hiding places in the weeds and under rocks, we banded 52 more before a storm arose which compelled us to start on our twenty-five mile trip back to Plum Island.

On the west side of Green Bay on a small shoal near Bark River, Michigan, we found another small colony of Caspian Terns and banded eight. There was a small colony of Common Terns on the opposite end of the island and we banded twenty-eight of them.

Our next work was done at Goose Island in the Straits of Mackinac on July 25, with the assistance of the Mackinac Island Coast Guards. Here we banded 134 Common Terns and two Herring Gulls.

On July 27 we found a small colony of Common Terns on the islands just north of Thunder Bay, in Lake Huron. There were a good many nests with eggs, but we found only four young birds large enough to band.

Late in the afternoon of July 27 we went to Black River Island and banded over 100 Common Terns and thirty-one Spotted Sandpipers. Young Common Terns do not assemble in flocks, but hide away singly and should be banded and left in same spot where found.

Our next stop was at Michigan State College to inspect Professor J. W. Stack's trapping station. This was the first trapping station established in a

college. The campus has many excellent places for traps, which accounts for Professor Stack's unusual results.

The 1926 party consisted of C. C. Miller, H. C. Wilson, J. Gundlach, H. Anderson, G. R. Lyon and Wm. I. Lyon. Our first trip was made on July 8 to Hat Island, where we found plenty of young Herring Gulls, and banded 492. While waiting for our boat at Egg Harbor, we banded four young Killdeers and four Spotted Sandpipers, making a 500 banding record for the day. The next day at Sister Islands we almost equaled the same record.

On July 11 we visited Jack Island, Jack Shoal and Little Strawberry Island. These islands have been cleared and houses built which reduced our record to

FIGURE 4. Caspian Terns in corral on Gravelly Island, Michigan. Photographed by Wm. I. Lyon.

only 200 gulls. The owners stated they hoped to be able to drive the gulls away from the islands next year.

By July 12 there was a high wind which made Green Bay very rough, so we tried the Lake Michigan side. Finding no boats available we telephoned to the Plum Island Coast Guard, and Capt. Solman responded cheerfully and took us to Gravel Island, Wis., where we banded eighty Herring Gulls. Then we went to the Spider Islands, which are connected now so there is but one island. After banding a few gulls, we all started for the Great Blue Herons. By much climbing and tree shaking we managed to band seventeen young great blues.

July 13. This was our lucky day, as we were off for Gravelly Island, Michigan, to our Caspian Tern Colony and had an early start. As we approached the island our binoculars revealed plenty of young birds to band. This time we tried driving them up on the center of the island into the weeds and low bushes with fair success. It was a cloudy day and poor for photographs, but was much cooler to work. We found a few dead young on the dividing line that had been

scalped by the old birds for intruding. The Caspian Terns have held the southeastern end of the island as their private grounds, while the gulls covered most of the rest of the island; but the northwest end was their real headquarters, although there were many more of the gulls in the tern's territory than in the two previous years. Our total banded for the day was 198 Herring Gulls, 310 Caspian Terns, six Red-winged Blackbirds, and two Killdeers, making a total of 516 for the record day.

On July 14 we stopped at Hog Island and banded seventy-four Herring Gulls and four Great Blue Herons. We passed Fish Island and Fisherman's Shoal, as we could see with the binoculars that there were not enough young in sight to warrant a stop, and continued to Little Gull Island where we banded 341 Herring Gulls and one Black Duck. The Coast Guards helped us in every way they could to make our stay pleasant and to assist in getting our fine record, and finally landed us at Gills Rock that night; we were soon back at our headquarters, Hotel Anderson, Ephraim, Wisconsin. Most of the 15th was spent in traveling. We stopped late in the afternoon to try the Dry Shoal in Misery Bay, but found that parties had been out on the shoal on July 4 and had disturbed the birds so the Common Terns had left. We managed, however, to band twelve Herring Gulls, one Red-winged Blackbird, three Killdeers, five Spotted Sandpipers, and two Mallards. We stopped at Escanaba, Michigan, for the night. July 16 was spent on the road, arriving at St. Ignace, Michigan, for the night.

On July 17 we crossed on the ferry to Mackinac Island and the Coast Guard Station; from here Capt. Eckoff took us to Goose Island. The Common Terns were all gone except one lone young bird. Here we banded one Mallard and twenty-four Herring Gulls. From appearances this island seemed to have been raided for eggs; and we afterwards heard rumors to that effect. Capt. Eckoff seeing our disappointment suggested that we try some nearby shoals. The first proved to have a fine Common Tern Colony; and we banded 174 young birds. There were many so small that they could not be banded, and there were twice as many nests with eggs so we were a little too early. There was another shoal not far away, and on landing we got a Red-breasted Merganser to band. There were apparently plenty of Herring Gulls to band and we started to work. About half way up the island some of those in advance noticed there was a difference in some of the young gulls, and that the new ones were smaller. It was then that we found that we were in the midst of a mixed colony of Herring and Ring-billed Gulls, and the baby chicks were so much alike that it was almost impossible to be sure of identification. Sixty-seven that were banded we were sure were Ring-billed Gulls. This brought our total up to 429 for the day. The 18th was spent on the road, arriving at Detour at night. Here we had a very pleasant evening with Rev. Geo. W. Luther and his wife.

On the 19th Rev. Luther took us in his boat up the Detour Channel to little Cass Island, and we banded 174 Common Terns and seven Herring Gulls. We drove to Sault Ste. Marie that evening, and had a very enjoyable evening with M. J. Magee and Dr. Christofferson. On the 20th we made a trip with Mr. Magee to Sand Island in the St. Mary's River; but the island had grown up to

brush so thick that the Common Terns had left; we saw many flying and were sure that the colony was not far away. We found an American Bittern, which we banded, making the trip total 2847. We had another very pleasant evening and motored for home.

WAUKEGAN, ILLINOIS.

Work with the Gulls on the Sister Islands in Lake Michigan.—While the study of the Herring Gull (*Larus argentatus*) has always interested me greatly, the number of gulls I have banded would hardly stand as proof for my interest. My total number banded is but 259.

In 1923 I received my permit too late to do any work with the gulls, but in 1924 I ventured to order 150 bands. Because of a rising wind my first trip to the Sister Islands on June 25 was limited to two hours, in which time I placed eighty-two bands with the aid of three friends. Most of the gulls were full grown at this time. Although the spring of 1924 was late and cold, fishermen informed me that over one-half of the eggs were pipped the last of May.

July 3 I placed seventy-three bands, all I had left. Of all the birds handled at this time only one gull carried one of my bands. I did find one dead gull, banded on the preceeding trip, which had been eaten by some gull or animal. We encircled the island and counted several dozen dead gulls, mostly young, but none of these wore bands.

Last year I was prepared to band a great number of gulls, but found little time to carry out my plans. I visited the Sister Islands July 7 and found a great harvest awaiting me. After about three hours amongst the nettles and tangled weeds I had banded 102 gulls. I again walked around the island in hope of finding bands on some of the dead birds, but there were only two dead adults of the one hundred dead gulls. Many of these had been killed by other birds, as indicated by their lacerated heads.

It was the 18th of July before I could again visit the islands. Upon landing I discovered that the young could all fly, and quite well, too. After a diligent search of over two hours I found three gulls hidden under wild grape-vines where quick escape was impossible. Upon releasing them, they flew away as well as adults. My consolation on this trip was that of banding a few Red-winged Blackbirds and a Spotted Sandpiper. But I solemnly vowed all the way back to Ephraim that after the first week in July, 1926, there would not be an unbanded gull to be found on the Sisters.

My returns have been few. Of the two returns from 1924, one was found frozen in the ice at Venice, Ill., December 31, 1924. The other was caught by Ed. H. Bean at the Zoo, Milwaukee, Wis., and "interned" at the Zoological Garden January 13, 1925. One gull banded in 1925 was found dead in a fish net at Two Rivers, Wis., September 30 of the same year.—HAROLD C. WILSON, *Ephriam, Wis.*

ORNITHOLOGICAL LITERATURE

NATURALIST'S GUIDE TO THE AMERICAS. By Victor E. Shelford, and a group of special editors. Williams and Wilkins. 1926. Pp. 1-761. Price $10.00.

The Naturalist's Guide appeared in the summer of 1926 after several years of effort on the part of the editors to produce a manual with descriptions of areas suitable for collecting and field studies. Such an object does not permit of complete accomplishment, but the editors deserve the congratulations of naturalists for approaching the objective as nearly as they have. The book will be of great value to naturalists who are traveling or taking up new headquarters in parts of the country with which they are unacquainted.

Descriptions of localities are written by many authors, all of whom are well known scientists selected from the hosts of field naturalists, evidently with considerable care and on the ground of their acquaintance with the regions which they describe. More than a hundred writers were engaged in the preparation of the descriptive portion of the work. Nineteen short papers form an introduction under the title "Uses, values, and management of natural areas." We find here many suggestions as to the administration of wild lands and conservation of wild life, along with other useful information. This is followed by about twenty-five pages of discussion of the original biota of America, together with a bibliography of the same subject.

The bulk of the book treats of "Natural Areas and Regions," and these regions are numerous within the extensive boundaries of North America and northern South America. The classification of these natural areas is based upon general ecological features, and is as follows:

Northern North America: Ice covered areas, Tundra, and northern Coniferous Forest.

Southern Canada and the United States.

- A. States, Provinces and Forest Districts, chiefly Coniferous Forest.
- B. States chiefly Deciduous Forest.
- C. States with Deciduous Forest, southeastern Coniferous Forest, and large Swamp Areas.
- D. States chiefly Oak Grove Savanna.
- E. States chiefly Grassland or Steppe.
- F. States chiefly Desert and Semi-Desert.

The Tropics north of the Equator.

- A. Mexico and Central America.
- B. Northern South America.
- C. Islands in the Atlantic and adjacent waters.
- D. Pacific Islands.

In the descriptions of the regions listed under each one of the subheadings indicated by capital letters above, there is no very close adherence to one outline, but in general the descriptions discuss the following: General Conditions, Geology, Physiography and Topography, Drainage, Maps available, Climate, Biota, Routes of travel, Soil, Pollution, etc. Lists of animals and plants are included. Some of these attempt completeness, while only the more important or prominent forms are selected in others. Ornithologists will find some useful bird lists, such as the Hudson Bay and Alaska region (p. 118), Athabasca region (p. 123), Yukon region (p. 135), Ohio (p. 357), Michigan (p. 381), and Mexico (pp. 580-593). About half of these lists give only the vernacular names of the species.

Locations of refuges, reservations, and National forests are given, with much else of value to the field naturalist, which will aid him in selecting regions for special investigations or faunal studies.

Little can be said in the way of adverse criticism of the Naturalist's Guide. As noted, such a work cannot approach completeness, but the lack of symmetry in treatment of the biota of many regions is puzzling and cannot be accounted for through lack of published information on the groups not treated. Fishes, amphibians, reptiles, insects, and mollusks are given little attention. In the case of the insects and other invertebrates the authors explain the omissions by referring to the small amount of ecological work that has been done on the invertebrates. This is surprising to the reviewer in view of the work of Forbes, Adams, Kofoid, and others in Illinois, Comstock, Baker, and Needham in New York, and Smith in New Jersey, as well as other work which might be cited. Omissions are explained by saying, "The principal users will be students of mammals, birds, or general ecology including plants." In view of the disproportionate treatment of biota, one may question the fitness of the title. Perhaps the publication should have been called a manual of ecology of terrestrial vertebrates. It is hoped that the book is the beginning of a series of similar works, the others treating the forms omitted in this one; then it will justify its present title, the "Naturalist's Guide."

The many bibliographies in the book will be found helpful to bird students, as well as others. Notwithstanding the disappointments that will come to some naturalists, who fail to find their limited fields adequately treated, the work is a valuable one, and excellent "as far as it goes." Bird students, and ecologists generally, will ever be grateful to Dr. Shelford, and the other editors and many authors, for making available so much useful information in a compact, handy, and well-bound field manual.—T. L. Hankinson.

Birds of Western Canada. By P. A. Taverner. Museum Bull. No. 41, Victoria Memorial Museum. Published by the Canada Department of Mines, Ottawa, Canada, September, 1926. Pp. 1-380, 80 colored plates. Price, 75 cents in paper covers, $1.00 in cloth.

After an interval of seven years this book appears as a complement to the earlier work by the same author on the "Birds of Eastern Canada." The new work makes a portly volume, which, with the beautiful colored plates, will be received as a welcome addition to our ornithological literature. The text is organized on the plan of the earlier volume; in places the earlier text is borrowed, but with much revision and with the addition of much new matter. Each species is described and annotated as to "distinctions," field marks, nesting, distribution, and economic status. All forms are discussed as species, but the recognized subspecies are mentioned and briefly discussed in a separate paragraph. This procedure is to be commended, we believe, in a work of this kind. This mode of treatment mitigates much of the inherent objection to the subspecific gradation. To the average reader subspecies are of but incidental interest, and he does not wish to be annoyed by having them thrust upon his attention. With the subjection of subspecies as effected in this work the reader is not likely to be annoyed, and he may even take an interest in the subject.

The illustrations are especially noteworthy. Altogether there are 315 text figures in black, showing characteristic structures, such as head, bill, feet, tail, feathers, etc. Especially valuable are the flight silhouettes of the birds of prey,

which also show, in some cases, useful diagnostic field marks. Each colored plate presents two or more species. Some of the paintings are the work of F. C. Hennessey, and first appeared in the "Birds of Eastern Canada." All of the new plates are by Allan Brooks, the authority on birds of the northwest. In comparing the work of these two artists we notice that Mr. Hennessey minimizes the background by using pale colors. Major Brooks, on the other hand, produces darker backgrounds with usually greater detail, thus approaching the style of Thorburn, the English artist. For this reason we believe the work of Brooks is more pleasing in its general effect, though we do not extend this comparison to the portraits of the birds, necessarily.

In general, the work presents the appearance of scientific accuracy, and will, at the same time, be acceptable as a popular treatise on the birds of the area treated; this area is so extensive, however, that the work is not local, and is by no means so limited in its usefulness.—T. C. S.

Delineations of American Scenery and Character. By John James Audubon. With an introduction by Francis Hobart Herrick. 1926. G. A. Baker & Co., 247 Park Ave., New York. Pp. 1-349. Price $4.50.

We note with satisfaction an apparent renewal of interest by American publishers in the older ornithological literature. Those who are familiar with Audubon's Ornithological Biography will recall that the first three, of the five, volumes contained chapters giving details of Audubon's travels, observations, and personal experiences, these chapters being intercalated among those on the birds. Audubon's powers of observation were very keen, his literary style is unique, his place in ornithological history is well known and unquestioned; all of which combine now to make the writings of this early naturalist unusually entertaining. These writings, hitherto, have not been available to most present-day readers. The plates have been prohibitive in cost, and even the text, the Ornithological Biography, sells for about fifty dollars when a set can be found.

The title here reviewed presents in one volume all of these chapters, sometimes called "episodes," fifty-nine in number, together with the introductions to Volume II and Volume III. Professor Francis H. Herrick has written a biographical introduction, which gives briefly an appreciation of the great naturalist; we believe, however, that a typographical error has been made in the date at the bottom of page xi. The republication of this material is a distinct service to the great body of nature lovers, who, we believe, will be fully appreciative.—T. C. S.

Wild Birds in City Parks. By Herbert Eugene Walter and Alice Hall Walter. Pp. 1-111. The Macmillan Company, New York, 1926. $1.50.

This small volume now appears in the twelfth edition, and shows considerable enlargement and revision. Earlier editions treated 145 species, while the present one includes 203 species, with an additional briefly annotated list of 108 rare, extinct, and introduced species. The present edition arranges the species in the order of the A. O. U. Check-list, rather than in the order of spring arrival, as in earlier editions. In the principal list each species is described with special attention to the field marks, the most diagnostic characters being italicized. A very ingenious field key which seems to be workable, and useful in reducing an unknown bird to a small number of possibilities, forms one of

the features of the book. Several other tables and charts combine to make this book serviceable to beginners in bird study in the northeastern United States.—T. C. S.

Report on Cooperative Quail Investigation: 1925-1926. By Herbert L. Stoddard. 1926. Pl. 5, pp. 1-62. Privately published by the Committee supporting the Quail Investigation in the South, in co-operation with the U. S. Biological Survey.

This paper is a continuation of the report of progress issued last year for the year 1924. The quail investigation now extends over an area of at least 20,000 acres, this much of the area being mapped in detail. Two men are at work on full time. Native quail to the number of 2,100 have been trapped and banded, thus being permanently identified. Of these banded 135 were later "returned" by hunters, while "fully another hundred" were retrapped by the banders. Out of seventy birds banded in the spring of 1925, 49 per cent (34 birds) were recovered during the next shooting season (seven to eleven months) within a quarter of a mile; 17 per cent (12 birds) were recovered at distances ranging from one to seven miles.

Some data are presented toward the solution of the problems of covey personnel and covey permanency. It is stated that remnants of reduced coveys often unite to form larger groups resembling original coveys. Although the hunter may leave a part of an apparent covey for "seed," he may in reality "be harvesting what has already been left for seed from several coveys" by previous hunters.

A favorite argument for the slaughter of quail is the assertion that shooting them up is necessary for dispersing the coveys in order to prevent the harmful and degenerative effects of inbreeding. On this subject the author states (page 26): "Harmful inbreeding would only seem possible in regions where quail are scarce and the coveys separated by considerable distances, and under such conditions only would a shuffling of the coveys be of possible value." We take it that this statement implies that inbreeding may be harmful and may result in degeneration if allowed to occur, even in nature. We wonder whether this is a biological fact. Where is the demonstration that healthy stock degenerates under inbreeding?

A very interesting chapter on the food habits of quail, by Mr. Charles O. Handley, is included in the report; the facts are summarized in tabular form. Considerable attention is given to the subject of quail enemies and diseases. The two reports indicate that the quail investigation has already been abundantly productive of results, and that the future is full of promise.—T. C. S.

Notes on the Birds Observed in Southern Florida. By Ernest G. Holt and George Miksch Sutton. Reprinted from Annals of the Carnegie Museum (Pittsburgh), Vol. XVI, No. 3-4, 1926. Pp. 409-439, 1 colored pl., 10 halftones.

The area covered by this list includes the southeastern coast of Florida between Palm Beach and Biscayne Bay. One hundred and twenty-three species are recorded in the list, most of which are quite fully annotated. Considerable work has been recently published on the birds of Florida, and the U. S. Biological Survey also has a survey in progress. The present list contributes to our knowledge of distribution.—T. C. S.

British Birds. By Archibald Thorburn, F.Z.S. Longmans, Green and Co., Ltd. New York and London. 1926. Demy 8 vo. Volume IV. Per volume, $5.50.

Volume IV of this splendid work has now reached this country. We expect to offer an extended review in a later issue.—T. C. S.

Report on a Collection of Birds and Mammals from the Atlin Region, Northern British Columbia. By Harry S. Swarth. Univ. Calif. Pub. in Zoology, Vol. 30, No. 4, 1926. Pp. 51-162, pl. 4-8, 11 text figures.

This report is based on work done partly in northern British Columbia and partly in southern Yukon Territory in the summer of 1924, under the patronage of Miss Annie M. Alexander, who has shown much interest in the exploration of this northwestern country. Mr. Swarth was accompanied by Major Allan Brooks during the greater part of the summer. The frontispiece is a colored plate of the Golden-crowned Sparrow, immature and adult, by Major Brooks.—T. C. S.

Report of Chief of Biological Survey of the United States Department of Agriculture. By E. W. Nelson, Chief of Bureau. 1926. Pp. 1-20.

One of the most interesting publications of the Biological Survey is the annual report of the Chief of the Bureau, giving a summary of the results of the year, a statement of the problems under investigation, and mentioning reports about to be published. The present report for the year ending June 30, 1926, contains much material of interest to ornithologists. Blackbirds were found to be doing enough damage to the rice crops in certain areas of the south to justify the use of poison and shotgun as deterrents. Fish-eating birds, such as the cormorant, great blue heron, bittern, loon, kingfisher, several gulls, terns and grebes were exonerated from any charge of serious damage to the food and game fishes in the north central states. The passing of Currituck Sound as a wild fowl paradise is noted. Considerable information is given on bird refuges and game preserves. There is also a report from the division charged with the enforcement of the federal game regulations.—T. C. S.

Report on a Collection of Birds Made by J. R. Pemberton in Patagonia. By Alexander Wetmore. Univ. Calif. Pub. in Zoology, Vol. 24, No. 4, 1926. Pp. 395-474, pl. 12-14, 11 text figures.

The title is explanatory of the work. The three plates in black and white are by Louis Agassiz Fuertes.—T. C. S.

Homes for Birds. By E. R. Kalmbach and W. L. McAtee. Farmers Bull. 1456, U. S. Dept. Agric. July, 1925. Price 5 cents.

The bird lover has here a brief manual touching most of the problems concerning the construction and location of many types of bird houses.—T. C. S.

The *Journal of the Tennessee Academy of Science* for April, 1926, contains three interesting articles by our members. One article on the summer birds of the Great Smoky Mountains is by Mr. A. F. Ganier; another, by Prof. G. R. Mayfield, is entitled "Magni fumosi conservandi sunt," and will be remembered as a paper which was read at the Nashville meeting of the W. O. C. Another article, by Prof. Jesse M. Shaver, is on the flowers of the Great Smokies. There is still another article on the trees of this region. Those who have visited, or who expect

to visit, the area which is proposed as a new national park in the Great Smoky Mountains of Tennessee will find this number of the *Journal* of much interest.—T. C. S.

The *1926 Year book of the Public Museum of the City of Milwaukee*, which was issued in the fall of 1926, contains three ornithological papers, viz., "Making a three reel heron picture," by Owen J. Gromme; "On the trail of the Sandhill Crane," by Owen J. Gromme; "Photographing and banding Red-tailed Hawks," by Irving J. Perkins.

The October number of the *Chemical Bulletin*, Chicago, contains a most readable article on "Ornithology as an Avocation," by A. W. Schorger, Madison, Wisconsin.

Nature Notes from Yellowstone Park for August, September, and October have appeared. Herein are recorded many interesting observations in all phases of natural history, including numerous notes on bird life.

We have received from Mr. Alfred M. Bailey, of Colorado, the reprints of his ten articles in the *Condor* on the birds of northwestern Alaska and regions adjacent to Bering Strait.

COMMUNICATIONS

THE RIDGWAY MEMORIAL CAMPAIGN

The Wilson Ornithological Club, in co-operation with the American Ornithologists' Union, and the Cooper Ornithological Club of California, is now actively forwarding plans for a suitable memorial to the work and services of Robert Ridgway, the dean of American ornithologists. This memorial will, it is proposed, take the form of a sanctuary for birds and other wild life. The tract of land comprising eighteen acres, situated near Mr. Ridgway's home at Olney, in southern Illinois, named by him "Bird Haven," on account of its attractiveness to bird life, is admirably adapter to this purpose. Its varied topography of little hills, ravines, streams, woods, and open grasslands accounts for its remarkably large number of different trees, bushes, and flowering herbaceous plants, and for its variety of bird life. Nearly 150 species of birds have in the last few years been recorded from this area.

Mr. Ridgway has offered to donate this property for a wild life sanctuary if a fund sufficient for its maintenance can be obtained. This is therefore an unusual opportunity to save this area for the preservation of birds and plants, and at the same time to erect a fitting memorial to America's great bird lover.

A fund of $35,000 is considered necessary to carry out this project. To raise this amount a committee has been appointed consisting of Dr. Harry C. Oberholser, of the United States Biological Survey, Washington, D. C., Chairman, representing the American Ornithologists' Union; Mr. Percival B. Coffin, 39 South LaSalle Street, Chicago, Illinois, representing the Wilson Ornithological Club; and Mr. Harry Harris, Box 123, Eagle Rock, California, representing the Cooper Ornithological Club. Bird lovers and all persons and organizations interested in conservation are urged to co-operate in raising the funds necessary to establish the Bird Haven Wild Life Sanctuary.

Remittances should be made out to the "Ridgway Memorial Fund" and may be sent to any member of the committee above mentioned.—HARRY C. OBERHOLSER.

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The WILSON BULLETIN extends the greetings of the New Year to all of its readers, and wishes them many returns. In many respects the past year has been a successful one for the BULLETIN. We have paid our bills promptly, and have incurred no debts for which we did not have money. We expect to pay for the present issue and have a clear slate for the beginning of the new year. The present number of the BULLETIN contains 80 pages, which more than compensates for the shortage in the last number. We have done the best we could in the matter of illustrations in the present volume, but hope to do better next year. We ask for the continued support of our constituency.